8

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VOL. XXVIII.

A MAP
to illustrate the paper
by M. Gen. A. B. Tulloch, C.B., C.M.G.
Damietta Mouth
Damietta
(Dumyât)
Burj ed Dîbeh
Burj el Gemîl
Port Saïd
L. Menzaleh
Tenis I.
Râs el Êsh
Umm Fareg
B. es Bughaiyir
Berimbâl el Kadîmeh
Menzaleh
el Hâyit
Birket ed Dakhaliyeh
Tanitic Branch
Pelusiac Branch
Kalat et Tineh
Pelusium
Isthmus of Suez
Sân
Tanis
B. Sân el Hagir
Tell es Semût
Kantara
Kafr el Azâbi
Bahr Fakûs
Turat es Sâlihîyeh
Sâlihîyeh
Balâh Lakes
Fordân
Abû Kebîr
Fakûs
Karaîm
Ismailia
(Isma'iliyeh)
Gisr
LAND OF GOSHEN
Pithom
Kishlâk
Mahsameh
L. Timsâh
Bîr Malchda
Uâdi Tûmilât
Tell el Kebîr
Nefisheh
Tusûn
Râs el Uâdi
Serapeum
Regûm el Khêl
Gt. Bitter Lake
Fayid
Geb. Geneffeh
Geneffeh
Little Bitter L.
Shalûf
Ft. Ajrûd
Geb. Ubid
Arsinoë
Gebel 'Atâkah
Suez
Bîr Mabûk
Port Ibrâhîm
Uyûn Mûsa
Râs el Adabîyeh
Râs Mesallât
G. Râs el Magg
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List of Members, &c.
Objects and Rules.
Contents of all the Volumes of the Journal

*** *The Institute's object being to investigate, it must not be held to endorse the various views expressed at its meetings.*

PREFACE.

THE Twenty-Eighth Volume of the *Journal of the Transactions* of the VICTORIA INSTITUTE is now issued. It is "a record of the various important questions, which are occupying the thinkers of the present day, taken up in papers by competent authors, carefully investigated, and impartially discussed at Meetings by those who have studied the subjects considered; to whose opinions have been added the statements of others whom distance has prevented attending the Institute's gatherings in person."

The papers and discussions in this volume are upon the following subjects:—"The Religious ideas of the Babylonians," by Mr. THEOPHILUS G. PINCHES, M.R.A.S., of the Department of Oriental Antiquities at the British Museum, whose valuable researches have shown, among other things, that Monotheism, so far from not being known before the time of Abraham—as some distinguished writers have urged—is proved by the tablets to have been in existence in the East in the third millennium B.C.* Colonel CONDER, R.E., D.C.L., LL.D., the Rev. A. LÖWY, LL.D., and others took part in the discussion, and Professor FRITZ HOMMEL contributed some remarks, especially dealing with a moot point among

* The late Canon Cook and others arrived at the same conclusion from the investigation of the earliest known Egyptian records.

Akkadian scholars in regard to the words *Êa* and *Yahve;* new researches have since enabled the author in his reply to set the question at rest before this volume went to press. "Chinese Ethics and Philosophy," by Surgeon-General GORDON, M.D., C.B., Q.H.P., in the consideration of which Sir THOMAS F. WADE, G.C.M.G., K.C.B., contributed full and valuable remarks (shortly before his decease),—some missionaries have also since added certain brief but important comments. On "The Luminiferous Ether," by Sir G. G. STOKES, Bart., F.R.S.; remarks by Sir H. BARKLY, G.C.M.G., K.C.B., F.R.S., Sir JOSEPH FAYRER, K.C.S.I., F.R.S., Admiral H. D. GRANT, C.B., R.N., and others. "Evolution and Design," by G. COX BOMPAS, F.G.S.; remarks by Mr. H. M. BOMPAS, Q.C., Professor J. F. BLAKE, M.A., F.G.S., Mr. D. HOWARD, F.C.S., and others. "Archæology and Evolution," by Mr. R. HUYSHE WALKEY. "Holy Scripture illustrated and confirmed by recent discoveries in Palestine and the East," by Professor E. HULL, LL.D., F.R.S., in the consideration of which Colonel CONDER, R.E., Professor J. H. GLADSTONE, D.Sc., F.R.S., Mr. HORMUZD RASSAM, and Professor F. PETRIE, kindly aided. "Buddhism, and the Light of Asia," by the Rev. R. COLLINS, M.A., the discussion on which was taken part in by Professor LEGGE, D.D. (Oxford), the Rev. G. U. POPE, the Rev. A. B. HUTCHINSON, M.A. (Japan), the Rev. KENNETH S. MACDONALD, D.D., Professor SIMON, Dr. S. W. SUTTON (India), and many others, all contributing to render this timely paper popular and useful. "Stone Folk Lore," by Professor DUNS, D.D., F.R.S.E., F.S.A. Scot.; remarks by the Right Honourable LORD HALSBURY, F.R.S. (Lord High Chancellor), Sir HENRY BARKLY, G.C.M.G., K.C.B., F.R.S., Sir G. BUCHANAN, F.R.S. (late), Sir J. FAYRER, K.C.S.I., F.R.S., Surgeon-General C. A. GORDON, C.B., Q.H.P., F.R.S., and His Honor J. OTONBA PAYNE (of the Supreme Court of Lagos).

"The Physical Conception of Nature," by G. MACLOSKIE, D.Sc., LL.D., Professor of Biology at Princeton College, United States, to the discussion of which Sir G. G. STOKES, Bart., F.R.S., Mr. G. B. BUCKTON, F.R.S., Professor J. H. BERNARD, D.D., Dr. A. T. SCHOFIELD, and others contributed. "The Philosophy of Auguste Comte reconsidered," by Mr. J. W. SLATER, F.C.S., F.E.S.—a paper which, with the discussion thereon, demonstrates the unscientific nature of a philosophy which some are seeking to re-introduce, especially among the rising generation. "On the supposed discovery of Remains belonging to an animal intermediate between Man and the Ape," by Professor E. HULL, LL.D., F.R.S., *illustrated*.

"The Passage of the Red Sea by the Israelites," by Major-General A. B. TULLOCH, C.B., C.M.G.; the author gives certain evidence which came before him whilst carrying out a War Office survey, evidence showing the physical possibility of the "passage" in question. A map accompanies this paper.

To all who have taken a part in the work done the best thanks of the Members and Associates are due; by their aid the Transactions of the Institute possess a unique value, containing as they do on each subject dealt with, the opinions, not of one author, but of many of those whose studies have lain in the direction of the matter taken up.

FRANCIS W. H. PETRIE, *Capt.*,
Hon. Sec. and Editor.

JOURNAL OF THE TRANSACTIONS

OF THE

VICTORIA INSTITUTE,

OR

PHILOSOPHICAL SOCIETY OF GREAT BRITAIN

ORDINARY MEETING.*

PROFESSOR E. HULL, LL.D., F.R.S., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following paper was read by the author :—

THE RELIGIOUS IDEAS OF THE BABYLONIANS.†

By THEO. G. PINCHES.

THE most extensive work upon the religion of the Babylonians is Prof. Sayce's book, which forms the volume of the Hibbert Lectures for 1887; a voluminous work, and a monument of brilliant research. The learned author there quotes all the legends, from every source, connected with Babylonian religion and mythology, and this book will always be indispensable to the student in that branch of Assyriology.

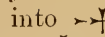
I do not intend, however, to traverse the ground covered by Prof. Sayce, for a single lecture, such as this is, would be altogether inadequate for the purpose. I shall merely confine myself, therefore, to the points which have not been touched upon by others in this field, and I hope that I may be able to bring forward something that may interest my audience and my readers.

It has been pointed out already more than once, that the origin of Babylonian religion is astral. The sign for "god," placed, as a rule, before the names of deities to indicate their nature, and leave no room for doubt as to what the writer intended to be understood, is an eight-rayed star, ✳,

* 16 April, 1894, 9th of 29th Session.

† Discussion completed, August, 1895.

changed, by the development of the writing, into , and ultimately into . In consequence of this, the sign for constellation, , the late form of which is (3 stars), was generally used for star, as well as for constellation. This astral origin of the Babylonian pantheon is probably due to the Akkadian influence.

The chief deity of the Babylonian pantheon was Merodach, whose name is generally written , *Amar-uduk*, abbreviated, in late times, when used as the name of a man, to , Marduk, and often found, in this case, with the termination *u* or *a* (Marduka = Mordechai). The translation generally given to the name Amar-uduk is "the brightness of day," *uduk* being an old Akkadian word meaning "day." Merodach had also a large number of other names, such as  , *Šilig-lu-dugu*, "the prince of the good;" , *Asaru* (or *Asari*), identified by Prof. Hommel with the Osiris of the Egyptians. He bore these names as the son of Êa or Aĉ, king of the underworld, and this shows that he was not the father or the oldest of the gods, and a short account of how he obtained his dominion over them may not, therefore, be uninteresting, enabling me, as it does, to give a fairly complete outline of the Semitic Babylonian legend of the creation.

The Semitic account of the creation is a long story, and covers many rather large tablets, the original number of which is supposed to have been seven. This legend begins by describing the time when the heavens proclaimed not and the earth recorded not a name, everything existing having been produced by Mummu Tiamat (or Tiawat) (Moumis Tauthe), the dragon of chaos. All was at that period naturally without order or completeness, and was followed by a time in which the creation of the gods (Laḫmu and Laḫamu,* Anšar and Kišar, "the host of heaven," and "the host of earth") took place. Father Anu ("the heavens") is also mentioned.

In the break which follows (the text being very imperfect in parts) there was probably described the creation of further deities, as well as the introduction to, and account of the origin of, the fight between Merodach and Kirbiš-Tiamat (or

* *See* page 4.

Tiawat), or Bel and the Dragon. (In what Kirbiš-Tiawat differs from Mummu Tiawat is doubtful.) Word of the hostility of Tiawat to the gods seems to have been sent to the latter by , *Anšar*, the personification of the host of heaven. All the gods, the messenger announces, have rallied around Tiawat, and they seem to be represented as calling out to each other: "Ye have made her agreement (that is: "agreement with her"), go to her side!"* The messenger then says: "They forsook me, and they are going to Tiawat's side." Then all the mighty ones made ready for battle. "Mother Ḫubur, the opener of the hand of everything" (apparently one of the titles of Kirbiš-Tiawat) seems, at this point, to speak for herself. She says: "I have collected unrivalled weapons—the great serpents are hostile—sharp-toothed also, and I have rendered them relentless. I have filled their bodies with poison like blood. I have clothed dreadful monsters with terrors—fearful things I have set up and left on high." She seems also to have brought forward various other fear-inspiring creatures—"great" (that is, probably, "excessively sultry and oppressive") "days," "scorpion-men," "fish-men," &c., "wielding weapons, ruthless, fearless in battle—their courages are strong, and have no rival." Over these she raised her husband Kingu. In consequence of these preparations, Anu, the god of the heavens, was sent, but was powerless before her (*âl ili'a maḫar ša*); Nudimmud (Ea as god of reproduction) feared, and turned back. The text here continues in the following strain (the narrator is addressing the gods):—

"Merodach, the sage of the gods, your son, was urged on,
In opposition to Tiawat, he brought his [br]ave (?) heart—
He opened his mouth and he said to me:
'If *I* (become) your avenger,
I will confine Tiawat—I will save *you*.—
Convene the assembly, make them return, proclaim a decree.
Afterwards let them command the army forward gladly—
I have opened my mouth, like you let me fix the decree and
It shall not change. Whatever I, even I, shall do
Let it not turn, let not my word be changed.
Get quickly ready, and let your ensigns appear (?)—

* In the original: *Adi-ša attunu ṭabnâ, ida-ša alka!*

Let your powerful enemy come and advance.'
The god Gaga went, he hastened along his road:
At the place of Laḫmu and Laḫame, the gods, his fathers
he stood, and he kissed the ground beneath them."

Gaga tells Laḫmu and Laḫame of Tiawat's rebellion in the same words as Anšar had used at the beginning, reporting the failure of Nudimmut and Anu, and Merodach's magnanimous offer to come to the rescue. Laḫmu and Laḫame heard, suckling the while "the Igigi,* all of them." They asked: "Who is the enemy? . . . . . *we* do not know who Tiawat is!" Apparently, Laḫmu and Laḫame had something else to think of, for, as far as one can see from the mutilation of the text in this place, they make no suggestion, and the gods settle that Merodach shall be their avenger.

The next (the 4th) tablet begins with a description of the honours conferred upon Merodach. Princely habitations were made for him, and he was set as ruler in the presence of his fathers (as the tablet has it). Miraculous powers were given to him, and when Merodach tested them successfully, the gods rejoiced and gave him blessing, and proclaimed him king. Merodach then armed himself for his struggle with Tiawat, the Dragon of Chaos, taking spear, bow, and arrows. He made lightning before him, filled his body with darting flames, and set his net ready to catch and entangle his evil opponent. He placed the four winds so that she should not escape, and roused every other kind of wind, with storms, to attack her. Kingu, her husband, was soon disposed of, and then she herself was challenged to do battle. She cried aloud in her rage, uttered incantations and charms, and begged weapons of the gods of battle. The combatants, after this, drew near to each other to begin the fight, and with the help of the net, a friendly hurricane, and his spear, Merodach soon put an end to her. All her followers, Kingu her husband included, were captured, though their lives were spared. The body of Tiawat, who personified the great waste or chaos of waters, was then divided, one portion being made into a covering for the heavens—"the waters above the firmament"—whilst the other remained below—"the waters under the firmament." Chaos and confusion having thus been ended, Merodach set about ordering the

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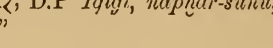
* The gods of the heavens. The original text is:  , D.P *Igigi, napḫar-šunu, inuku*, "The Igigi, all of them, they suckled."

world anew, and with the opening lines describing this the 4th tablet ends.

We know, from the bilingual account of the creation, that Merodach, with the goddess Aruru, was the creator of all existing things, and in the Semitic account of the creation also he is represented as taking a prominent part in it, being the creator of the world, and apparently the orderer of the heavenly bodies. This being the case, the Babylonian scribe or narrator gives, in a series of numbered paragraphs which occur on a large fragment of the last of the series that has been handed down to us, praises of a deity who was apparently the chief of the Babylonian pantheon. He is called Zi ("life"):—

"Zi, thirdly, he called him,—he who doeth glorious things,
God of the good wind, lord of hearing and obeying;
He who causeth glory and plenty to exist, establishing fertility;
He who turneth all small things into great ones—
(Even) in his strong severity we scent his sweet wind.
Let them speak, let them glorify, let them pay him homage!"

This paragraph is immediately followed by one which is very interesting indeed, speaking, as it does, of the creation of mankind as one of the things which this deity, the king of the gods, had done, and giving the reason for it—a reason strangely agreeing with that given by Caedmon in "The fall of the Angels," and Milton in "Paradise Lost":—

"(He called him), fourthly, Aga-azaga (*i.e.*, 'the glorious crown')—
May he make the crown glorious—
The lord of the glorious incantation raising the dead to life,
Who granted favour to the gods in bondage,
Fixed the yoke, caused it to be laid on the gods who were his enemies (and)
On account of their sin, created mankind.
The merciful one, with whom is the giving of life—
May his word last, and may it not be forgotten
In the mouth of the black-headed ones* whom his hands have made.

---

* The "black-headed ones" (*ṣalmat ḳakḳadi*) apparently stands for "mankind," or, perhaps, "the dark race" in contradistinction to the fair sons of Japheth.

(He called him), fifthly, Tu-azaga (*i.e.*, 'the glorious incantation')—
May he bring his glorious incantation to their mouth—
He who, by his glorious incantation, has removed their affliction—
Ša-zu, 'knowing the heart' of the gods who raised rebellion,
Doing evil things, he let (them) not go forth with him.
. . . . . .
. . . . . .
As he tirelessly thwarted Kirbiš-tiawat,
Let his name be Nîbiru, the seizer of Kirbiš-tiawat.
May he restrain the paths of the stars of heaven.
Like sheep let him pasture the gods, all of them.
May he imprison the sea (*tiawat*), may he remove and store up its treasure,
For the men to come, in days advanced.
May he hear and not reveal, may be bring (back) at a future time.
As he has made heaven* and appointed the firm (ground).
Father Bêl called his name 'lord of the lands'—
An expression (that) the Igigi pronounce (as) their oath(?).
Êa also heard, (and) in his heart† he was glad,
And with his word, he made glorious his (Merodach's) fame:
'He is like me, so let his name be Êa—
Let him effect the performance of all my commands,
Let him, even him, bring to pass all my wishes.'
By the record of the 50 great gods,
His 50 names he proclaimed and he caused to be added:
'His path
May he take and may he show himself (to be) the first—
Wise and learned, may he take counsel . . .
May the father repeat (it) and the son accept (it),‡
May he open the ears of the Lord and the Ruler,
That he may rejoice over the lord of the gods, Merodach;
That his land may prosper and he himself have peace.
Faithful is his word, his command changeth not—
What goeth forth from his mouth no god altereth."

---

* Lit.: "the place," *asru*, explained as being equivalent to *šamû*, "heaven," in the commentary, W.A.I. V., pl. 21, line 55 *cd*.

† Lit.: "liver."

‡ Êa, the speaker, was the father of Merodach, so that these words are equivalent to a promise to aid him with his counsels, and express the hope that Merodach would accept the advice tendered.

Such is the history of Merodach, the chief god of the Babylonians, who was also greatly honoured by the Assyrians. Yet, strange to say, there are fewer men's names compounded with the name of Marduk than with that of Nebo, and in the introductions to letters from Assyria the name of Nebo precedes that of Marduk. Of course the latter fact would not, of itself, be strange, because Aššur was the name of the chief god of Assyria; but that Nebo should be more popular than Marduk in Babylonia requires some sort of explanation. The proportion in favour of Nebo is about 75 *per cent.* These names are ejaculations in praise of the deity similar to those found in Hebrew. "Merodach is lord of the gods," "With Merodach is life," "Merodach is master of the word," "The dear one of the gods is Merodach," "Merodach is our king," "(My, his, our) trust is Merodach," "Be gracious to me, O Merodach," "Direct me, O Merodach," "Merodach protects," "Merodach has given a brother" (Marduk-nadin-âḫi, one of Nebuchadnezzar's sons), "A judge is Merodach," &c., &c., are some of the names of men in which the god is invoked, and they show fairly well the estimation in which he was held. Precisely similar names, however, are given to Nebo, such as "Nebo is prophet to the gods," "My eyes are with Nebo," "Nebo is lord of the names," "Nebo has given a name," "Nebo, protect the son" (Nabû-apla-uṣur or Nabopolassar), "Nebo, protect the landmark" (Nabû-kudurri-uṣur or Nebuchadnezzar), "Nebo, protect the king" (Nabû-sarra-uṣur, one of Nabonidus's scribes), "Nebo is a defence before me" (Nabû-dûr-pani-ia), &c., &c. Some names, however, go beyond these, and give to Nebo titles properly belonging to Merodach, for not only do we find such names as "Nebo is lord of the gods," "Nebo is prince of the gods," "Nebo is king of his brothers," but we find also "Nebo is king of the gods" (Nabû-šar-îlâni)—a name which ought to belong to Merodach alone. The sungod (Šamaš, apparently pronounced by the Babylonians *Šawaš*) bears similar titles. "Šamaš is lord of the gods," "Samaš is master of the word:" Life was not only to be found with Merodach—it could be found also with Nebo and Samaš (Itti-Nabû-balaṭu, Itti-Šamaš-balaṭu), and in many other things the deities seem to have had identical powers—they could "create," they could "give" and "increase" sons and brothers, they could save, they could "make" one's name, they could "save" and "protect," they could "plant." Ea, Nergal, Ninip, Kuru-gala, Addu or Rammanu (Hadad or Rimmon), Mur, Sin (the moon-

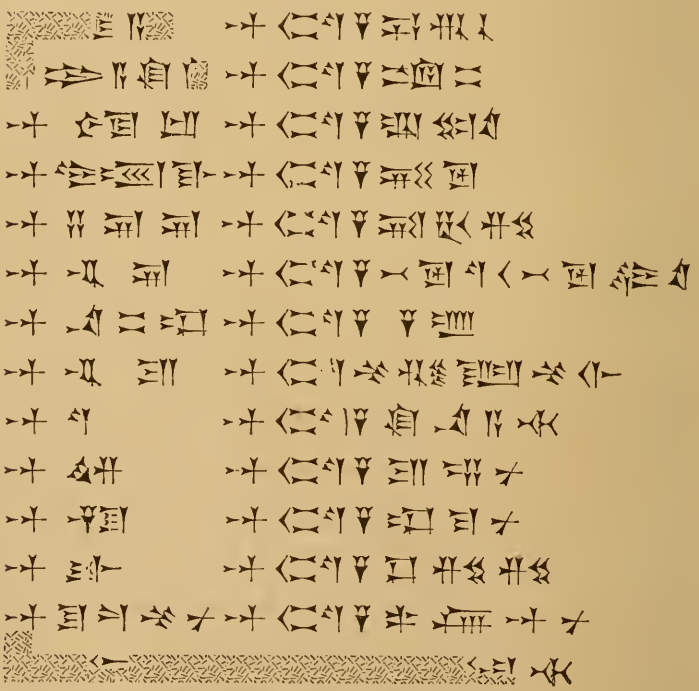
god), Zagaga, Zariḳu (or Zaraḳu), Pap-sukal, Anu, Mâr-bîti ("the son of the house"), Uraš, Igi-gub, &c., &c., also had, more or less, the same power, notwithstanding the various attributes assigned to them in the inscriptions.

The fact is, all these gods were really one.

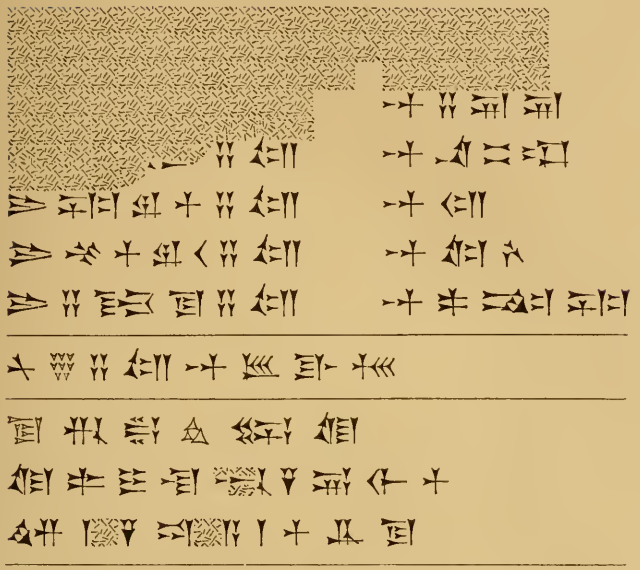
It is many years since, in consequence of the identification of so many gods with Ya or Yau (=Heb., Jah), I had come to this conclusion—a conclusion which I am now in a position to prove. The most important text for this I reproduce here:—

81-11-3, 111.

Obverse.



Reverse.



Transcription.

Obverse.

	. . . . .	Marduk ša e-ri-šu.
	Lugal-a-ki-*	Marduk ša naḳ-bi.
3.	Nin-eb	Marduk ša al-li.
	Ne-uru-gal	Marduk ša ḳab-lu.
	Za-ga-ga	Marduk ša ṭa-ḫa-zi.
6.	Bêl	Marduk ša be-lu-tu u mit-lu-uk-tu.
	Na-bi-u^{m}	Marduk ša nikasi.
	Sin	Marduk mu-nam-mir mu-ši.
9.	Šamaš	Marduk ša ki-na-a-ti.
	Rammānu	Marduk ša zu-un-nu.
	Tišḫu	Marduk ša um-ma-nu.
12.	Sig	Marduk ša kir-zi-zi.
	Su-ḳa-mu-nu	Marduk ša pi-sa-an-nu.
	. . . . .	. . ti.

Reverse.

. . . . . Za-ga-ga.
. . . . . ṣa-lam Na-bi-u^{m}.
3. 𒀭 sag-šub-bar ṣa-lam Nergal.
𒀭𒀭 mu-bar-ru-u ṣa-lam Dâani.
𒀭𒀭𒀭 za-zak-ku ṣa-lam Pa-pil-sag.

6. Gamru samnet ṣa-lam îlâni rabûti.

Ku-tal bâb Tin-tir ki.
Ki pi-i la-bi-ri ša-ṭir bari^{m}.
9. Duppu ❙ Kudurru (?) abil ❙ Maš-tuk-ku.

Translation.

Obverse.

. . . . . *is Merodach of planting.*
*Lugal-a-ki-** *is Merodach of the water-channel.*
3. *Ninip* *is Merodach of strength.*
Nergal *is Merodach of battle.*
Zagaga *is Merodach of war.*
6. *Bel* *is Merodach of lordship and dominion.*
Nebo *is Merodach of wealth (or trading).*
Sin *is Merodach the illaminator of the night.*
9. *Samaš* *is Merodach of decisions.*
Rimmon *is Merodach of rain.*
Tišhu *is Merodach of handicraft.*
12. *Sig* *is Merodach of* kirzizi
Sukamunu *is Merodach of the reservoir.*
. . . . . .

Reverse.

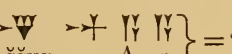
. . . . . *Zagaga.*
. . . . . *is the image of Nebo.*
3. *The Sagšubbar is the image of Nergal.*
The Mubarrû is the image of the Judge.
The Zazakku is the image of Papilsag.

6. *Altogether* 8 (?) *images of the great gods.*

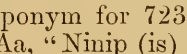
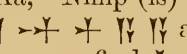
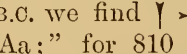
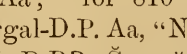
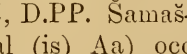
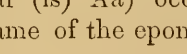
The wall of the gate of Babylon
According to the old copy written and done.
9. *Tablet of Kudurru (?) son of Maštukku.*

We here get Merodach expressly identified with no less than thirteen other gods, and as the tablet is broken, it is probable that he was, when the text was perfect, identified with at least as many more—in fact, these gods were all manifestations of Merodach with reference to the various things (agricultural, military, &c.) named. This, in itself, is sufficiently remarkable, and may be regarded, it seems to me, as being at least an approach to monotheism. But this is not all. Aššur-banî-âpli, king of Assyria, in a letter to the Babylonians, of a date (650 B.C.) possibly anterior to that of the text printed above, mentions only the deities Bêl (once), and Merodach (twice)—both of them designations of one and the same deity; and in the body of the letter he twice uses the word *îlu*, "God," in the same way as a monotheist would. When exhorting the Babylonians to keep to the agreements, he says: *û ramankunu, ina pân îli lâ tuḫaṭṭâ*, "and commit not, yourselves, a sin against God;" and: *u ḫaṭṭû ina lib âdî ina pân îli*, "and a sin concerning the agreements is before God,"—the whole letter, in fact, seeming to be written in accordance with the views current at the time.

These, however, are not the only indications of a tendency to monotheism, or to the idea that all the gods were but mere manifestations of one supreme deity; nor have we far to look for an example, for the name of the eponym for 651 B.C.—the year before the abovenamed letter was written, is handed down to us in the following form:—



= "Aššur (is) Aa."

An examination of further texts gives still more examples of this, thus the eponym for 723 B.C. is  , D.PP. Ninip-D.P. Aa, "Ninip (is) Aa," whose name occurs in one copy written  as eponym for 737 B.C. As eponym for 770 B.C. we find  , Bêli-D.P. Aa, "(My) lord (is) Aa;" for 810 and 819 B.C.  , D.PP. Nergal-D.P. Aa, "Nergal (is) Aa;" for 820 B.C.  , D.PP. Šamaš-D.P. Aa, "Samas (is) Aa." Nergal-Aa (Nergal (is) Aa) occurs, written  , as the name of the eponym for 832.* We find the

* In one copy the divine prefix is wanting before the name of Nergal, but is present in both cases before that of Aa (see Delitzsch's *Lesestücke* 2nd edition, p. 89, l. 81).

name Ninip-Aa ( ) again as eponym for the year 839 B.C., Aššur-Aa again as the name of the eponym for 863 B.C., Ninip-Aa again for 865 B.C., and, last but not least, , Abi-(D.P.) Aa, "My father (is) Aa," is the name of the eponym for 888 B.C. Had we the list complete, there is hardly any doubt that we should be able to trace names of this class right back to the earliest times.

We have not far to go to find an explanation of who this , *Aa* or *Â*, was, with whom so many of the gods of the Assyrians and Babylonians seem to be identified, for the very same text offers a suggestion. The eponym for the years 826 and 823 B.C. was a certain , Yaḫalu, whose name is also written , Aaḫâlu or Âḫâlu, thus showing the identity of the groups and , which is further confirmed by the two variant forms of the name Ya-da'u, which is written both , (D.PP.) Ya-da' and , Aa'-da' (Aa'u-da'u or Â'u-da'u). The Rev. C. J. Ball regards this name as being, in all likelihood, the same as יְרַע, and related to Beeliada or Eliada as Nathan to Elnathan. , Abi-Aa, the name of the eponym for the year 888 B.C., is therefore none other than the Assyrian form of the name אביה, Abiah, and all the other names, compounded with the element , simply identify that god with deities of the Babylonian and Assyrian pantheon with which it is combined.

In addition to the above, the following may also be quoted:—

, *Bêl-Yau*, "Bel is Ya" = בְּעַלְיָה, Bealiah, the name of one of David's mighty men.

, *Bêli-Aa*, "Bel is Ya," or "My lord is Ya."

, *Nusku-Aa*, "Nusku is Ya."

, *Ya-ḫabi*, "Ya has covered" (?),* a slave sold to Neriglissar in the 34th year of Nebuchadnezzar. His father's name was , variant , *Abi-nadib*, Heb. אֲבִינָדָב, Abinadab.

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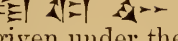
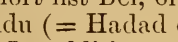
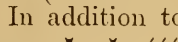
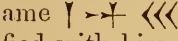
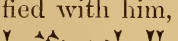
* Compare חֲבַיָּה, with the same meaning, and Ya at the end instead of the beginning.

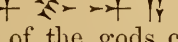
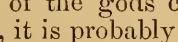
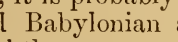
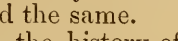
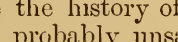
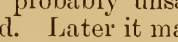
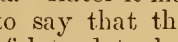
, *Daddi-ya*, "Hadad is Ya," also given under the form of  , *Dadi-ya*, and , *Daddi-ya*.

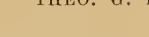
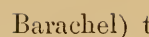
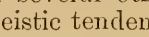
In this short list Bel, or "the Lord," the god Nusku, and the god Daddu (= Hadad or Rimmon) are all identified with Ya or Jah. In addition to this, we find that the moongod Sin, in the name , Sin-Aa, "Sin (is) Ya" is also identified with him, and that it has a very interesting variant,  , Šer-Aa, "Ser (is) Ya."

As many of the gods could be identified with Merodach and with Ya, it is probably not going too far to say that, to the initiated Babylonian and Assyrian, Merodach and Ya were one and the same.

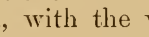
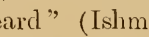
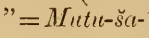
To trace the history of this quasi monotheism would be difficult and probably unsatisfactory with the materials at our command. Later it may be done. It will be sufficient at present to say that the name Yâ not only occurs upon documents of late date, but also upon tablets of the third millenium B.C. Thus we have the name  , *Aḫi-yā*, Heb. אֲחִיָּה, Ahiah, together with  , *Šamši-ya*, "My sun (is) Ya," and its curious and interesting variant  , *Šamaš-mušizib*, "the Sungod (is) a saviour."

With a view to find out the comparative popularity of the various gods, I have made lists of the names containing them. Thus for 179 names containing the name of Nebo, there are only 47 containing the name of Merodach and 73 containing the name of Bel; 22 containing the name of Sin, the moongod; 59 containing the name of Šamaš, the sungod; 34 containing the name of Hadad or Rimmon; 37 containing the name of Êa. The other gods occur in very small number, but I have registered no less than 70 names containing the element *ya*, which, however, in many cases, may be simply the possessive pronoun of the first person singular.

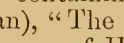
Less doubtful than the names ending in *ya* are those ending in *îlu*, "god." We have  , *Êpeš-îlu*, and  , *Ibnî-îlu*, "God has made;"  , *Šama'-îlu*, "God has heard" (Samuel);  , *Arad-îli*, "Servant of God;"  , *Amel-îli*, "Man of God;"  , *Rêmut-îli*, "Grace of God;"  , *Bariki-ilu*, "Whom God has blessed"

(Heb. בָּרַכְאֵל, Barachel) the son of a slave-woman named *Aḫat-âbi-šu*;  , *Ilu-šarra-uṣur*, "God, protect the king," and several others, many of them indicating a strong monotheistic tendency. Archaic inscriptions present us, in addition, with the well-known  , *Išmê-îlu*, "God has heard" (Ishmael); and , *Mut-îli*, "Man of God"=*Mutu-ša-îli*, Methusael; as well as , *Gamal-îli*, "Benefit of God" (Gamaliel);  , *Ilu-naṣir*, "God protects," with some others.

It cannot be said, however, that the monotheistic side of the Babylonian religion was by any means so strong as the polytheistic. It was as likely as not a pandering to the desires and the ignorance of the people—indeed, it is probable that mysticism was firmly fixed even in the minds of the most enlightened, who must have imagined the deity to be able to divide himself, and manifest himself to the people, under any of the many forms under which they conceived him. As the creator and ruler of the world, he was Merodach; as the illuminator of the day and the night, he was the sungod, the moongod, and also any or all of the stars. As god of the waters, of all water-channels, and of reproduction, he was Êa (Aê or Oannes); as god of the atmosphere, he was Rimmon or Hadad; as god of war, he was Nergal or Zagaga; and he had also a large number of other forms, too numerous to mention.

The god Êa or Aê is indicated by the groups  (or ), and  , in the former case as god of the "house of waters," or abyss, in the latter as god of water-channels. From the names compounded with his name we learn that he was creator of the gods (*Êa-êpeš-îli*), that he created divinity (*Êa-îlūtu-ibnî*), that he was a maker and giver of seed (*Êa-zēra-ušabšî*, *Êa-zēra-ikîšā*), and a giver of happiness (*Êa-mudammiḳ*). He could also be invoked in names: *Êa-tabbani*, "Êa, thou createst!" *Êa-rêmanni*, "Êa, be gracious to me!" *Êa-pir'a-uṣur*, "Êa, protect the branch" (offspring); and one name exhorts men to keep his command (*Uṣur-amat-Êa*).

Rimmon or Hadad, the god of the atmosphere, &c., was invoked in the same way. His most enthusiastic worshipper asks, in the name he gave his son, "Who is like Hadad?" (*Mannu-aki-Addu*). We also find such names as "Hadad gave life" (*Addu-uballiṭ*), "Hadad plants" (*Addu-êreš*), or "plants the name" (*Addu-šum-êreš*). He was also a protector

(*Addu-naṣir*), and is called upon to protect the king (*Addu-šarra-uṣur*); he was also a comforter (*Pasiḫu-Addu*) and a healer (*Addu-rapa'*). As god of the lightning he could shine (*Addu-unammir*), and as Rammānu (Rimmon), Ramimu, or Ragimu, he was "the thunderer," a name which is also reflected in the Akkadian  , *Utu-gude*, "the Sungod proclaimer." In a list giving over 40 names for this god we see that he was likewise called Adad, and that Addu and Dadu * were his Amorite (Phœnician) appellations. On the tablet K. 100 he is called "chief of heaven and earth, lord of wind and lightning, ... giver of food to the beast of the field." It is not improbable that the god , *Mur*, is to be identified with Rimmon or Hadad. His name is found in the following: *Mur-âḫa-iddina*, "M. has given a brother;" *Mur-zēra-ibni*, "M. has created seed;" *Mur-šimânni*, "Mur, hear me;" &c.

The West-Semitic deity Ben-Hadad, "the son of Hadad," was imported into Babylonia as Abil-Addu. The following names are found containing his name: *Abil-Addu-natanu* (Ben-Hadad-nathan), "The son of Hadad has given," *Abil-Addu-amari*, "The son of Hadad has spoken," and *Kullum-ki-Abil-Addu*, "He is revealed like the son of Hadad." Abil-Addu is naturally quite a late importation into Babylonia.

Considering the importance of the deity, it is remarkable how few names are compounded with the name of Anu, the god of the heavens. He is described as *rêštû, âbi îlāni*, "the primæval one, father of the gods," and there was a temple to him, associated with Merodach, at Aššur, as well as other fanes both in Assyria and Babylonia. Among the names we may quote *Anu^{m}-šum-lîšir*, "May Anu direct the name;" *Anu^{m}-zēra-iddina*, "Anu has given seed;" *Anu^{m}-âḫa-iddina*, "Anu has given a brother;" and *Ṣilli-Anu^{m}*, "My protection (is) Anu." The name of this god is often found in men's names during the time of Seleucus and Demetrius, from which it may be gathered that his worship was at that time in great favour. Anu, the god of the heavens had, as his consort, Anatu, and these two are regarded as the Laḫmu and Laḫamu of the Creation-story, who suckled, at the beginning of the world, all the Igigi, or gods of the heavens (see p. 4, text and footnote).

The name of the Moongod is Sin, represented by the

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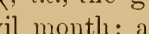
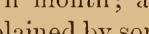
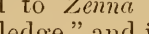
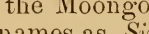
* Compare p. 7.

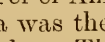
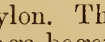
groups , *i.e.*, the god XXX, from the 30 days of the Babylonian civil month; and  , rarely  , *En-zu(-na)*, explained by some as being possibly for Zu-en-na, later corrupted to *Zenna* and then to *Sin*. *En-zu* means "lord of knowledge," and is a very fair suggestion as to the meaning of his name.

Apparently the Moongod was a very lucky divinity, for we find such names as *Sin-udammiḳ*, "Sin gives luck," or "joy," and *Sin-udammiḳ-unninu*, "Sin gives joy (for) weeping"—also *Sin-damaḳu*, "Sin is lucky." He could be a protector (*Sin-naṣir*), a guardian (*Sin-êṭir*), and the giver of a name (*Sin-nadin-šumi*). A very common name is *Sin-šadûnu*, "Sin (is) our mountain (of defence)," likewise *Sin-îmitti*, "Sin is my right-hand;" and the names *Sin-karabî-išmê*, "Sin has heard my prayers," *Sin-šimânni*, "Sin, hear me," and *Sin-iḳbî*, "Sin has spoken," seem to carry with them an indication of their origin, and to explain or illustrate the titles generally given to this god in the texts, where he is called *bêl purussî*, "lord of the decision." As the moongod, one of his titles was *naš ḳarni birâti*, "raiser of the horn of intelligence."

Though Nergal was the god of war, this is not the side of his character which is by any means prominent in the names of the people. *Nergal-ušallim*, "Nergal has delivered," or "given peace;" *Nergal-iddina*, "Nergal has given;" *Nergal-banunu*, "Nergal (is) our creator;" *Nergal-rêṣûa*, "Nergal (is) my helper;" *Nergal-dânu*, "Nergal judges"—such are the names one meets with. Others are *Nergal-šarra-uṣur*, "Nergal, protect the king" (Neriglissar); and *Nergal-šûzibanni*, "Nergal, save me." His name is generally written , but it often appears in phonetic form,  . He was "lord of strength and power (*bêl abari u dunni*), and a long text printed in the fourth volume of the *Cuneiform Inscriptions of Western Asia* is devoted to him.

The sungod was another favourite deity. His name is generally written , D.P. Utu "Day-god," or "Bright one," but it is often found written ( ) , and sometimes  . A man would call his son "Light of the Sungod" (*Nûr-Šamaš*), or he would say that he was "a Sungod to his house" (*Šamaš-ana-bîti-šu*), and naturally those names would stick to him. But this god was also a judge, and we have therefore such names as *Šamaš-dânu*, "Samas

judges;" and *Etilli pî Šamaš*, "Samas is prince of the word."* Like the other gods, he could protect (*Šamaš-bela-(šarra, âba, pir'a)-uṣur*, "Šamaš, protect the lord (king, father, offspring)," he could give peace (*Šamaš-šulum-šukun*), grace or favour (*Šamaš-rêma-šukun*), and life (*Šamaš-uballiṭ*, *Šamaš-balaṭ-su-iḳbî*). He could save (*Šamaš-ušêzib*), confirm one's name (*Šamaš-šum-ukîn*)† or direct it (*Šamaš-šum-lîšir*), create seed (*Šamaš-zêra-ušabšî*) and protect one's life (*Šamaš-êṭir-napšâṭi*). Among the more poetical combinations in which his name is found, are *Lušêsî-ana-nûr-Šamaš*, "Let (my son) go forth to the light of the Sungod;" *Gabbi-ina-ḳâtâ-Šamaš*, "All is in the hands of the Sungod;" *Šamaš-dûrûa*, "The Sungod is my fortress;" *Ṭâbu-ṣil Šamaš*, "Good is the protection of the Sungod," and *Itti-Šamaš-lûmur*, "Let me look with the Sungod."

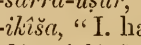
Zagaga (), who was, like Nergal, a god of war, was also looked upon with favour by the Babylonians, who named one of the gates of the capital after him. He was identified with  , *Nin-ip*, the god who, according to the Tel-el-Amarna tablets, was worshipped at Jerusalem. Zagaga was the patron deity of the city of Kêš (Hymer), near Babylon. The names containing his name are *Zagaga-aldu*, "Zagaga begets;" *Zagaga-pir'a-uṣur*, "Zagaga, protect the offspring;" *Zagaga-napisti^{m}-uṣur*, "Zagaga, protect my life;" *Zagaga-šarra-uṣur*, "Zagaga, protect the king;" *Zagaga-silim*, "Zagaga, give peace," &c.

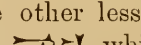
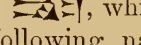
Ninip seems to have been identified with many gods. Besides Zagaga, he appears as the same as Anu and Anatu^{m}, the male and female personifications of the heavens; Nebo, the god of wisdom; *Bêl mâtâti*, "lord of the lands," one of the titles of Merodach;‡ and Êgirsu, the god of Lagash.§ He had also many other names, as, for instance, Madanunu, explained as "Ninip, the proclaimed (?), the renowned, the high;" En-banda, "Ninip, he who takes the decision of the gods;" Ḫal-ḫalla, "Ninip, protector of the decision, father of Bel," Me-maġa ("supreme word"), "Ninip, guardian of the supreme commands;" with many others. It is probably on account of his being identified so often with other gods, that his name occurs so seldom in composition with the names of

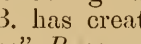
* Lit.: mouth.
† The Saosduchinos of Ptolemy.
‡ See page 6.
§ See the Journal of the Victoria Institute, Vol. XXVI., p. 123 ff.

men. Besides the name of the well-known Assyrian kings *Tukulti-Ninip*, "My trust is Ninip," and *Ninip-tuklat-Aššur*, "Ninip (is) the trust of Assur," we have only *Rabu-ša-Ninip* *Raba-ša-Ninip*, "Ninip's great one;" *Šangu-Ninip*, "Priest of Ninip" (perhaps really a title), *Ninip-šarra-uṣur*, "Ninip, protect the king," and a few more. Nevertheless, a great deal may possibly hang on this deity, when we have more material and information about him, for it is he whom the ancient inhabitants of the East identified with "the most high God" of Salem or Jerusalem.* One of his titles was *Igi-gubu*,=*âlik maḫri* or *âlik pâni*, "one who goes before," probably meaning "a primæval god." It is not impossible that Ninip is intended in the following names:—

Igi-gubu-na'id, "I. is glorious."
Igi-gubu-reûa, "I. is my shepherd."
Igi-gubu-âba-uṣur, "I., protect the father."
Igi-gubu-âḫa-iddina, "I. has given a brother."
Igi-gubu-sum-iddina, "I. has given a name."
Igi-gubu-šarra-uṣur, "I., protect the king."
Igi-gubu-ikîša, "I. has given."
Igi-gubu-kînu (*-kîni*), "I. is faithful or everlasting."

Among the other less frequent deities may be quoted  , which is probably to be read Bunene. We find the following names which refer to this deity: *Bunene-ibnî*, "B. has created;" *Bunene-âḫa-iddina*, "B. has given a brother;" *Bunene-šarra-uṣur*, "B., protect the king;" and *Arad-Bunene*, "Servant of B." He was worshipped at Sippara, and also in the temple of the Moon and the Sun at Aššur. He, too, was one of the deities invoked when sacrifices were made to the Sungod.

 is apparently to be read *Šugidla*. He was god of  , Sumdula. One of the names compounded with his is *Šugidla-êreš*, "S. has planted."

 , *Išum*, "the glorious sacrificer," who bears the surname *muttalliku*,† appears in the name *Išum-uballiṭ*, "Išum has given life," and in Nûr-Išum, "Light of Išum," about 2000 B.C. He is given as one of the gods who were in

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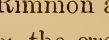
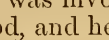
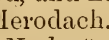
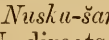
* His principal temple in Babylonia was at Nippur. Cf. W.A.I. II. 61, 50.

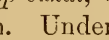
† Probable meaning, "He who goes quickly."

the presence of Merodach, and he was worshipped in the temple of Anu and Rimmon at Aššur.

 , *Nusku*, the great messenger of Bêl, was a god much thought of. He was one of the judges of the temple of Aššur; his name was invoked when sacrifices were made to Samaš, the sungod, and he was one of the gods who were in the presence of Merodach. Among the names containing that of this god are *Nusku-šarra-uṣur*, "N., protect the king;" *Zêra-êšir-Nusku*, "N. directs the seed;" *Nusku-barakku*, and *Nusku-lamanu*. There is also a god Nussu, whose name occurs in *Atamar-Nussu*, "I have seen N.," and who may be the same deity.

 , *Pap-sukal*, was also a deity who was among those held in esteem. Under eight different aspects he was known by eight different names, besides that given above, which was his special appellation as god of decisions (*ša purusê*).  was *Pap-sukal ša lamasi*, "Pap-sukal of colossi." He was worshipped in the temple of Merodach at Aššur, in the city of the temple of the lady (of Akkad) (), and in "É-kiturkani, the temple of the lady of heaven, which is beside the brook of the New Town, which is within Babylon." Among the names compounded with his are *Iddin-Pap-sukal*, "P. has given," and *Nûr-Papsukal*, "Light of Pap-sukal."

Another of the minor deities held in esteem was Zaraḳu or Zariḳu, probably meaning "the scatterer." He was one of the gods of the temple Ê-sagila and Babylon, and his name was invoked when sacrifices were made before Bel. The priest of Zaraḳu or Zariḳu is often mentioned in the Babylonian contract-tablets. Names compounded with his are *Zariḳu-zêra-ibnî*, "Z. has created seed;" *Zariḳu-šum-iškun*, "Z. has made the name;" and *Zariḳu-rêmanni*, "Zariku, be gracious to me."

There is a mysterious deity  *Iltammeš* (sometimes written with one *m*), of whom the inscriptions say nothing. Names containing this are *Iltammeš-natanu*, "I. has given;" *Iltammeš-ilâa* and *Iltammeš-lâa*, of doubtful meaning; *Iltameš-dîni*, "I., give judgment;" *Abu-Iltammeš*, "(My) father is I.;" *Iltammeš-nûri*, "I. (is my) light." This is seemingly not a native god—probably west Semitic. Of another deity, Ilteri, found in the name *Ilteri-ḫanana*, the same may be said, for it is certainly not Babylonian, and

probably means "Ilteri is gracious." Compare the Heb. חנן and חנון.

Of , *Martu*, who was called "the son of Anu," I have only as yet come across one name, and that a slave's, compounded with his, namely, *Martu-zēra-ibnî*, "M. has created seed."

Other deities whose names occur are , *Amar*, perhaps sometimes a mistake for , Amar-uduk or Merodach (*Amar-âḫê-uṣur*, "A., protect the brothers; *Amar-ušallim*, "A. has given peace;" *Amar-apa'*; *Amar-âḫa-iddina*, "A. has given a brother;" *Amar-natanu*, "A. has given"); , *Dâanu*, the judge, probably another name for the sungod (*Dâan-šum-ibnî*, "D. has created the name;" *Dâan-šum-iddina*, "D. has given a name;" *Dâan-âḫa* (*âḫê*)-*iddina*, "D. has given a brother," or "brothers;" *Dâan-šum-uṣur*, "D. protect the name"); , *Illat* (*Illatu*, *Illati*, *Illata*; *Arad-Illat*, "Servant of Illat"); , *Mâr-bîti*, "the son of the house" (*Mâr-bîti-iddina*, "M. has given;" *Mâr-bîti-âḫê-iddina*, "M. has given brothers); , *Lumlum* or *Ḫumḫum* (*Lumlum-âḫa-iddina*, "L. has given a brother"); and a few others. It is noteworthy that we find the name = , *Aššur*, Asshur, the national god of Assyria, Babylonia's ancient foe, in the names *Ana-Aššur-taklak*, "I trust in Aššur; *Aššur-kitru*, "A. is an aid;" *Aššur-rêmanni*, "Aššur, be merciful to me;" *Aššur-zēra-ibnî*, "A. has created seed;" *Aššur-šarra* (*âḫa*)-*uṣur*, "Aššur, protect the king," or "the brother," &c. , *Aššur*, was also used as a man's name by itself, and without any prefix.

As names of goddesses compounded with men's or women's names (probably mostly the latter) we find *Bêltu* (Beltis), *Ištar*, *Ininni* (*Inninnu*), *Anunitu*^{m}, *Nanâ*, *Bau* or *Gula* (also called, apparently, by the Akkadians, *Meme*), *Aa*, *Tašmêtu*^{m}, *Banitu*^{m}, *Mammitu*^{m}, *Ba'ti* or *Ba'iti*, *Šarrat*, *Bidinnam*, *Aška'itu*^{m}, *Kibi'tu*^{m}, &c. Many of these could, like the gods, be identified with each other, but it is doubtful if any goddess was identified with any god, except in so far that she might represent him as his consort (for every god had his feminine counterpart). Of many of these goddesses the same things are stated as of the gods, as, for instance, *Bêltu-têreš*, "Beltis has planted;" *Bêltu-têṭir*, "B. has guarded;" *Bêltu-šadûa*,

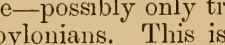
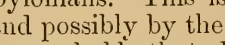
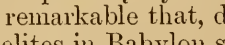
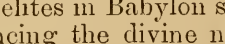
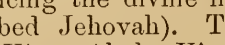
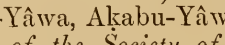
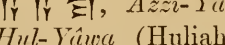
"B. is my (protecting) mountain;" *Ištar-šum-têšir*, "Istar has directed the name;" *Ištar-âḫa-tadinna*, "I. has given a brother;" *Nanâ-rêminnu*, "Nanâ, be gracious to me;" *Nanâ-ana-bîti-šu*, "A goddess Nanâ to her house" (compare *Šamaš-ana-bîti-šu*, "A sungod to his house"); *Bau-êṭirat*, "Bau-guards;" *Bau-têreš*, "B. has planted;" *Rêmut-Bau*, "Grace of Bau;" *Bau-âḫa-taddina*, "B. has given a brother;" *Gula-zêra-tabnî*, "Gula has created seed;" *Gula-balaṭ-su-taḳbî*, "G. has commanded his life;" *Gula-šarra-uṣri*, "Gula, protect the king," &c., &c. It would take too long, however, to quote all the names, or even all the interesting ones, but those already given will suffice to show their nature to be similar to those compounded with the names of male deities.

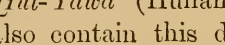
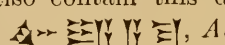
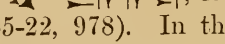
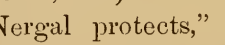
That the goddesses are not actually identified, in the Babylonian religious texts, with the gods, says but little against the theory now advanced,—namely, that with a certain select circle of the initiated, a kind of monotheism existed in ancient Babylonia and Assyria. If the consort of a god could be in any way identified with him, and all the gods were identified with each other, then all the goddesses could also be identified with each other (as is, indeed, indicated by the lists). A Babylonian member of the initiated circle (if such existed) would, in this case, have no difficulty in giving a consistent explanation of his attitude towards the national religion, grossly polytheistic as it undoubtedly was to the great majority of the people of those ancient realms.

This Paper is based principally upon the trade-documents of Babylonia, but there are numerous other inscriptions which throw light upon, or raise, religious questions, some of them of more than ordinary interest. I have already alluded to Ninip being the name given to the "most high God" of Salem, and this is a point which is not without its value, especially as it may throw light upon an Old Testament allusion. One of the titles of Ninip is *âpil Ê-šarra*, "son of (the temple) Ê-šarra," an ephithet that enters into the name of the well-known Assyrian king Tiglathpileser III, in Assyrian *Tukulti-âpil-Ê-šarra*, "My trust is the son of Ê-šarra," and it is not impossible that Ahaz (2 Kings xvi) may have been induced to become the vassal of the Assyrian king by the thought, that one who bore, as part of his name, one of the titles of the god of Salem of old, could not be such a heathen as he was painted.

Though Nabonidus was probably not any more of a

monotheist than the majority of his countrymen (for there is no proof that he had lost the support of his subjects by his monotheistic tendencies), Cyrus, on the other hand, notwithstanding his seemingly polytheistic records, was always a sufficiently good, though politic, monotheist. Persian monotheism seems, indeed, in conjunction with that of the captive Israelites, to have had a certain amount of influence—possibly only transient—on the religious ideas of the Babylonians. This is shown by the names ending in Yâwa, and possibly by the text printed on pp. 8 and 9.

It is remarkable that, during the period of the captivity, the Israelites in Babylon seem to have had no objection to pronouncing the divine name Yahwah (afterwards wrongly transcribed Jehovah). This is shown by such names as Natanu-Yâwa, Aḳabu-Yâwa, etc. (see my article in the *Proceedings of the Society of Biblical Archæology*, Nov., 1892, p. 13). Besides those which I have already quoted,  , *Azzi-Yâwa* (Azziah), and  , *Ḥul-Yâwa* (Huliah) also occur. Women's names might also contain this divine element, as in the case of  , *Abî-Yâwa*, daughter of  , *Irî* (82-5-22, 978). In the case of  , *Nergal-êṭir*, "Nergal protects," son of  , *Malaki-Yâwa* (Malchiah), however, was Nergal-êṭir a perverted Jew? or was Malaki-Yâwa a converted Babylonian? Or was it a common thing for the then rising generation of Jews to bear heathen names? Similar questions might also be asked with regard to , *Ṭâbat-Iššar*, "the goddess Iššar is good," daughter of  , *Yašeʾ-Yâwa* (Isaiah or Jeshaiah).

Other interesting names are  , *Yâ-abîni*, "Jah is our father" (82-5-22, 1017);  , *Nabû-Yâ*, probably "Nebo is Jah" (82-5-22, 2234;  , *Ḥanni-Ya* (= Hananiah) (82-5-22, 3875);  , *Yâ-Dagunu*, "Jah is Dagon" (81-11-3, 887, Nabopolassar, 7th year), etc., etc. Lists of examples, however, might be lengthened indefinitely, but this consideration of space forbids.

APPENDIX I.

List of the Divine Names mentioned in the foregoing Paper.

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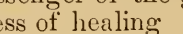
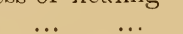
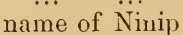
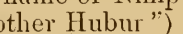
Iltam(m)eš () 19
Ilteri () 19
Ininnu, name of a goddess found in the names  , *Arad-Ininni*, "servant of Ininnu," and  (?), *Ininnu-taddina*, "Ininnu has given" 20
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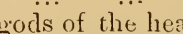
Kibi'tu^{m}, name of a goddess found in the woman's name  , *Kibi'tu^{m}-kîšat*, "Kibi'tu^{m}-gives" 20
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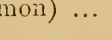
Ša-zu,  , a name of Merodach 6
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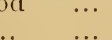
Zi,  , a name of Merodach 5

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APPENDIX II.

YÂ AND YÂWA.*

IN consequence of certain prevailing opinions concerning Yâ (= Jah) and Yâwa (Jehovah), a few additional remarks upon these words may not be useless.

In view of the list of names given on p. 26, there can be hardly any doubt that in Old Testament names ending in *-iah* and *-iahu*, these terminations are shortened from *-yahuah* (or *-yahwah*), probably on account of the unwillingness of the Jews of old to pronounce this divine name. The name Yah (or Jah), which frequently occurs in the Old Testament, and especially in the Psalms, cannot, on the other hand, be regarded as an abbreviation of Yahwah, for it is not only extensively found in Assyrian under the forms *Â*, *Âu*, *Â'u*, *Yâ* and *Ya'u*, in proper names, but it also occurs, under the form *ya'u*, in one of the four-column syllabaries, found by Mr. Rassam at Abu-habbah, as one of the Semitic Babylonian words for "God," and is there even furnished with a feminine form, *yâti*. Both *ya'u* and *yâti* are referred to by Prof. Sayce (*Higher Criticism*, p. 90), who, in consequence of their being the same as certain Babylonian words for "I," regards them as an attempted etymology, on the part of the Babylonian scribe, connecting them "with words signifying 'myself' in his own language."†

The existence of the word *ya'u*, meaning "God," in Assyro-Babylonian, vouches for the extreme antiquity of the word, and shows that it was common to a large portion of the Semitic race. Yahwah (Jehovah), however, was a name of God peculiar to the Hebrews, and there is apparently no reason to doubt the statement in Exodus vi, 3, that He was not known by this name to the ancestors of the Hebrew nation. Its earlier occurrence in the Bible is due to the scribes later on. (*Aug.* 1895.)

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* See pp. 12–13, 22 and 26.

† Compare Exodus iii, 14.

The Chairman (Professor E. Hull, LL.D., F.R.S.).—I am sure you have all listened with great gratification and interest to this very suggestive paper. It shows an extraordinary amount of learning and research into those ancient tablets of Babylonia, and it contains so many references which we all recognise as regards their Hebrew equivalents. I will ask you to return your hearty thanks to the Author, and after one or two letters have been read, we shall be very happy to hear any observations from those present.

The Hon. Secretary (Captain F. Petrie).—Among other letters the following have been received :—

The Rev. G. Ensor, M.A., writes :—

I very really appreciate the vital work which the Institute is accomplishing.

I have read Mr. Pinches' paper with great interest, and think it disposes excellently of the imagination that Abraham was the first Monotheist, an opinion which has found credence in certain high quarters. I think, too, that the author's presentation of the tablets on p. 5, contributes very importantly to supplying the background and environment of vaguely monotheistic thinking mingled with polytheism ; which is exactly what we might look for in the circles outside the family of God in Patriarchal times.

The Rev. Canon R. B. Girdlestone, M.A., writes :—

I have read the proof of the paper with the deepest interest, as it points in the direction of Primitive Monotheism* and illustrates the antiquity of the name "Jehovah."

Major C. R. Conder, R.E., D.C.L., LL.D., writes :—

In this valuable paper, Mr. Pinches sums up the results of discoveries which he has been making for some time past, and which are of great value and importance. I feel convinced that his view as to the monotheism of the Babylonians is correct. Their

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* Mr. Pinches has deduced many valuable facts from the inscriptions to which his paper refers, but I venture to think the one of highest interest in these days is that the Babylonian records point to the fact that in the earliest known times men were Monotheists; and in this connection it may be noted that another member—the late Canon F. C. Cook—arrived at the same conclusion from his investigations of the earliest known Egyptian records.—Ed.

higher teachers very early perceived that the animism of the lower orders was but a worship of the phenomena of nature. Their great gods (as among Akkadians, Egyptians, and Greeks) were heaven, earth, ocean, sun, moon, light, the breeze, the planets, with a host of spirits or angels, against whom were arrayed the demons, under death and the infernal deities. The Pantheon of the Hittites and Amorites was the same as the inscriptions show, though the names were often different.

The story of Marduk and Tiamat appears to be a myth of the sun fighting the storms, such as occurs in all other mythologies, as Mr. Pinches would no doubt allow.

His discoveries as to the name of Jah or Jehovah in Chaldea are of high interest, and the fact that this name occurs, as that of the Supreme Deity, before 2000 B.C., is so important that it is to be regretted that he has not elaborated this part of his paper,* and given us the earliest texts in which it is found. The discovery would fully agree with the Biblical statement (Gen. iv. 26) that the name of Jehovah was used very early by mankind in Western Asia. Its occurrence in the ninth century B.C., explains how Sennacherib claimed to be a servant of Jehovah (2 Kings xviii. 25); while Nebuchadnezzar and Cyrus, are also called "servants of Jehovah" in the Bible, and Balaam from Pethor on the Euphrates worshipped Jehovah. These discoveries of Mr. Pinches militate against the view that Jehovah was the name of a "tribal god" of the Hebrews. In the Babylonian account of the flood, *Ya* or Jehovah is the name of the God who causes the deluge.

The name El for God is very ancient, and in the Amorite and Philistine letters we find Elohim, as well as on a text from Samâla in the extreme north of Syria (8th century B.C.), so that neither the name Elohim nor the name Jehovah, in the Bible, is any mark of late authorship.

On the Samâla texts, written in Phœnician characters about 800 B.C., and 730 B.C., Hadad is mentioned, and called "Sun and Cherub and Light." He was a Syrian deity, and adored by Phœnicians as *Addu* before 1500 B.C., at Gebal. I think, however, when Mr. Pinches has time to read the Jerusalem letters to Amenophis III, he will not find that the worship of *Ninib* at that city is mentioned in the passage to which he alludes.

Just as the Babylonian upper class discovered that the popular

* See Appendix II., and reply to Dr. Hommel.

deities were only the representatives of natural phenomena, controlled by law and subject to a single power, so the Egyptians also discovered the "One with many names," as early as 1600 B.C. In Palestine the prophets found themselves surrounded, in the same manner, by an ignorant populace worshipping Baal, Ashtoreth, Tammuz, Ashera, and many other Canaanite idols. Even in our own times the superstitions of remote ages survive among the peasantry, though the religion of the Korân proclaims the unity of God.

Rev. A. Löwy, LL.D.—I am particularly interested in the subject broached by the learned lecturer, having written some years ago an essay akin to the one that we have heard to-day; but not being versed in Babylonian inscriptions, I confined myself to Biblical investigations. My article was published by the Society of Biblical Archæology in 1889.

Our able author has thrown considerable light upon the historical and religious antiquities of the Hebrew Scriptures and especially upon the study of Hebrew proper names, and I should like to advert to a few of the salient points. The poetic language of the Hebrews unquestionably embodied, to a large extent, the religious imagery of cognate nations. While the Babylonians are represented to have allied their gods with the stellar regions, we meet with numerous instances in which the Hebrews likewise described the God of the Universe as "Jehovah Zebaoth", *i.e.*, the Jehovah of the (Heavenly) Hosts.

In noticing the names of the unruly *Tianat*, or *Tiamat*, one is tempted to compare these two terms with the apparent Hebrew cognates *Tohu* (chaos), and *Tehom* (the bottomless deep).

The names of the food-giving gods, *Lahmu* and *Lahamu* may be connected with the Aramaic word Lahma, and the Hebrew Lehem (food or bread); and since the Babylonian Pantheon extended at an early period to Palestine, we may surmise that *Beth-Lehem* was originally the temple of a food-god, just as *Beth-Shemesh* designated the temple of the Sun-god.

The region of the God *Nebo* on the borders of Palestine is noticed in the Book of Numbers, Chapter xxxii, and in connection with the death of Moses. *Zi*, the god of life, calls to mind the Aryan (especially the Slavonic) term *Zhi* which is equal to *Vi-ta* (life). The migration of mythological terms from one

stock of nations to another is now and then discredited as "unscientific," but the objection only rests on dogmatic subtleties. I concur in the opinion that primeval polytheism was in some measure based on faint monotheistic notions, while the manifestations of distinct forces of nature would likewise help to foster deifications. It is obvious that in some idolatrous quarters the god of the locality may have been supposed to be the Ruler-in-Chief; but on the occurrence of successful wars and conquests the victorious tribes and nations would allot the supremacy to one or more of their own newly-imported deities, and then the tribal and national deities of the subjected people would be placed in a co-ordinate or more likely in a subordinate rank.

The treatment of the final *ea*, as equal to the Jehovistic ending *iah* (Lord) in Hebrew names, opens the door to new researches in the diffusion of religious ideas; and also this suggestion of Mr. Pinches merits the best thanks of unbiassed students. (Applause.)

Mr. D. Howard, F.C.S.—I hardly like to venture into a discussion without special knowledge of the subject, but might I suggest that the curious attitude of the mind of Balak when taking Balaam from hill-top to hill-top contained the idea, that somehow or other, the god that he worshipped might alter his mind by a change of place. It is curious how similar ideas are found in the Indian worship of their gods who were one and many; and it is most difficult to shake their faith because of this strange mixture —this double frame of mind—a belief in one god, and yet in many gods. This strange confusion is well deserving of study by those who are brought into contact with the heathen; for it is a fact that they worship many gods with a much less definite idea of distinct personality than we attribute to them.

The Chairman.—Perhaps Mr. Pinches will now reply.

The Author.—I will reply to the discussion as briefly as I can. I am very much obliged to you, I need not say, for your kind attention, and to Dr. Löwy and the other speakers for their very interesting remarks. I do not think, however, that many of them require an answer on my part. What Dr. Löwy has said is very suggestive, and I shall note it for future consideration and examination. With regard to Lahmu and Lahamu, I must confess that I do not know the meaning of these words, nor do I know of any meaning having been suggested (but I am not certain on that

point). The likeness of the word Zi, in Akkadian "life" or "the soul," to the Russian *Zhi*, and the Greek ζωή, is very remarkable. I have myself noticed likenesses between Akkadian words and those of the Indo-Germanic languages, but I have always been afraid to make comparisons with them, as such might, in most cases, turn out to be merely chance-likenesses. Nevertheless they are always worth observing.

Of course, as Dr. Löwy said, some villages may have had their own deity, and that deity was, to the people of that district, the most important, and the head, to them, of the pantheon, and that would, of course, tend to monotheism, *i.e.*, amongst those people that deity was the one deity, and as far as that deity was concerned, this would be monotheism.

It is peculiar, as was remarked by the second speaker, that Balak seems to have thought that by a change of place he could get a change in the mind of the deity directing the prophet whom he was consulting. He evidently thought that by going to another place he would get under the influence of another deity, or form of that deity, and be able to get a more favourable answer.

May I here say how very much we are indebted to Mr. Rassam for his discoveries. They have been most important to our researches, the amount of material which he has gained—and thus enables us to add to our knowledge—is enormous, and of exceeding great value. If I remember rightly, the text of 81, 11, 3, 111 was found by him, and many of the most important names, including that of Yasé-Yâwa, come from tablets found by Mr. Rassam.

As regards the third letter read, I observe that Major Conder points out that the god Ninip was not the god worshipped at Jerusalem, and suggests that I should look at the passage again. I have done so, and the text, in those lines referring to Jerusalem, runs as follows:—"The City of the Mountain of Jerusalem—the City of the god Ninip, its name is the City of the King, patarat." Now *patarat* is the third person singular for *patrat*, from *pataru* "to open" or "split." One may take that passage in two ways. Either three cities are mentioned, or one is mentioned in three different ways. As the verb is the third person singular, I am inclined to think that one city is intended and that the three lines are to be translated either, "The city of the mountain of Jerusalem. Its name is the City of the Temple of Ninip—the city of the King—was

taken," or else, "The city of the Temple of the god Ninip. Its name is the City of the King was taken, *i.e.*, the words "its name" may refer either to "the City of the King," or to the phrase, "the city of the Temple of Ninip," but in any case, it seems to me, the name applies, and we must regard the three expressions as being in apposition, the Temple of Jerusalem at that time being regarded as the Temple of Ninip.

I am much obliged to Major Conder for his kind remarks, as well as to Canon Girdlestone and the other scholars who have written. I have also received a note from Sir Henry Howorth, who, is unavoidably obliged to be away from London. He says he agrees with the arguments in my Paper, and that it seems incredible that some races should have manufactured an absolutely new god in every locality where they settled. They were local gods, or local names, but apparently forms of one deity, or a small pantheon. They are called gods—they may originally have been saints.

The meeting was then adjourned.

REMARKS.

REMARKS ON THE FOREGOING PAPER.

"*SOME ANNOTATIONS.*" By Prof. Dr. Fritz Hommel.

IN my paper on the Babylonian Creation Story ("Glossen und Excurse" II and III, in the *Neue Kirchl. Zeitschrift*, 1890–1), I proved that *kirbish* in the expression *kirbish Ti'âmat* is only adverbial, in the sense of "in the midst;" therefore the name Kirbish-Ti'âmat (instead of Ti'âmat alone) must disappear from our translations of the Babylonian Creation texts.

The last tablet of this text, of which Mr. Pinches gives a translation, is a mere recapitulation of the different acts of creation; before the poet speaks of the creation of mankind, he spoke in unmistakable words of the *creation of plants* and *animals;* the line which Mr. Pinches translated:

"He who causeth glory and plenty to exist, establishing fertility,"

(in the original: *mushabshî ṣimri u kubutti, mukîn khigalli,*)

I think ought to be translated:

"Creator of leaves" (comp. Heb. *ṣammêret*) "and vegetables" (lit., magnificence, viz., of plants; German: Pflanzenpracht, comp. *kebôd*, Ies., 10. 18; 35, 2; 60, 13), "establisher of fertility" (meaning here the animal fertility, in opposition to the before-named vegetable fecundity).

Concerning the proper names compounded with the name of Nebo, I found a similar proportion in favour of Sin for the time of Khammu-rapaltu (Khammu-rabi), whereas names with Nebo are almost wanting in this early period of Babylonian history. Comp. my "Geschichte Babyloniens und Assyriens," p. 377.

Concerning the tendency to monotheism in Babylonia, I entirely agree with the interesting and learned deductions of my esteemed friend Mr. Pinches. As to the numerous names ending in *-iya*, *-ua*, which seem, at the first glance, to contain the pronominal suffix of the first person, I wish to call your attention to the remarkable variants in Strassmaier's "Nabonidus," 132, 4:—

Kabti-ilanî-Marduk abil-shu sha Nabû-tabni-uṣur.

comp. with 133, 4, *Kabtîya abil-shu sha Tabnîya.*

We learn from such variants that all these names in *-iya* and *-îa* are mere hypocoristical abbreviations of fuller names (comp. Peiser, "Aus dem Babyl. Rechtsleben," I (1890), p. 11). So are

also the old Babylonian names *Imgurûa*, *Ibnîa*, only abbreviations from *Imgur-Samas*, *Imgur-Bel*, etc., and from Ibni-Martu, Ibni-Sin, and other similar names.

Quite another question is to find the right explanation of the numerous names ending in 𒀭𒀭𒀭, collected by Mr. PINCHES. Whilst names such as *Ya-khâlu* (Yah is my خال), *Ya-khabi* (Yah is my عمّ, here *khavi* standing for *'ammî*, *'avvî*), *Abi-nadib* (father of the latter), *Nadbî-yau* a.o. are pure Canaanitic, the names with 𒀭𒀭𒀭 must contain a national Babylonian-Assyrian male deity. We know besides it a female deity 𒀭𒀭𒀭, the consort of Samas, a variant of which is 𒀭𒀭 *Nin-a-a*;[1] it is a synonym of *Anunit*, and in the same manner as Anunit is a female personification of *anun*, "heavenly ocean;" also 𒀭𒀭 is such an one of *anna*, *an-i* (*ayi*) "heaven"[2] But who is the male deity 𒀭𒀭𒀭, with whom are identified in proper names almost all of the other Babylonian-Assyrian gods (*e.g.*, Nindar-Aï, Bel-Aï, Nirgal-Aï, Samas-Aï, Aššur-Aï)? Is Professor Delitzsch right, who, in his book, "Wo lag das Paradies?" postulated a Babylonian (originally Sumerian) word *i*, *ya*, *ya'u*, "god," which he thought the prototype of the Hebrew Yahu or Yahve?

In my opinion, we have only two possibilities to find the origin of this enigmatical name. Either it is the same as the name for the goddess 𒀭𒀭𒀭, only as a male personification; then it would be originally no more than Anu or "Heaven," perhaps also metaphorically used for "god" (= *ilu*). Or, it is the same name (only written in other characters) as the well-known god Ea (𒀭𒌋𒌋𒌋𒌋𒌋), the god of the Earth and of the subterranean waters, and also sometimes, like his son Merodach, the god of the creation.[3] In every case this male deity 𒀭𒀭𒀭 (*ya*, *Aï*) seems to me in its semiticised form *Ya'u* to be the original of the Hebrew

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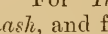
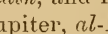
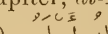
[1] Comp. *Nanai*, Ναναῖα as a name of Istar.

[2] Comp. my paper, "Babyl. u. aeg. Göttergenealogie" (Transactions of the ninth Congress of Orientalists, II), p. 219, *bît* 𒀭𒀭-ak=*bît an-na* (Haupt, "Keilschrifttexte" No. 21, lines 29 and 30). In W.A.I. III, 66, 2*d*, the wife of Samas is called 𒀭𒀭𒀭𒌋𒌋𒌋, *i.e.*, *Iyaïtu*, a name formed from *aya* or *iya*, like *Anunitu* from *anun*.

[3] It is deserving of attention that the oldest Sumerian name of this god Ea is not 𒀭𒌋𒌋𒌋𒌋𒌋, *E-a* (this latter only used in the Semitic translation of the Sumerian incantations), but *In-ki* and *Dugga* (or *Zibba*); so that it would be not impossible the god *In-ki* (lord of Earth) got his other name *E-a* only in later times, *Ea* being then only a variant of the old word *ya* *ïa*, *aï*, for "heaven" or "god."

Yahu[1], which Moses transformed to *Yahve* (the Creator), so filling the old heathenish word for Heaven (or Ea) with new substance, and giving it a new theological meaning instead of the old mythological. This seems the more probable, as even with the Assyrians (according to the instances given by Mr. PINCHES) the word had also the general meaning of "god" in a half monotheistical sense.

Concluding, I should like to remark that the goddess  is not to be transcribed *Shu-gid-la* (PINCHES), but *Shu-sil-la*. Sometimes this deity is male, but then in the older form  (or ), *Ku-sirra*. *Shu-silla* is the consort of *Ishum*, *Ku-sirra* the god *Ishum* himself, who bears also the name *Zariḳu* (comp. for the latter identification TALLQVIST, *Zeitschr. f. Assyr.*, VII, p. 275). For *Iltammish* (out of *Ishtammish*) may be compared *Shamash*, and for *Ilterî* (out of *Ishterî*), the Arabic name of the planet Jupiter, *al-Mushtarî* (otherwise *Mush-ta-ri-lu* = *Mushtarî* + *ilu ?*)—والله أعلم.

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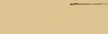
[1] On the contrary, the Assyrians of the time of Sennacherib wrote the Edomitic name Yahu-ram (Yoram)  *-ram-mu* (Sen. 2, 54), so using their national religious name for expressing the Hebrew-Edomitic name *Yahu;* comp. PINCHES, *Proc. Soc. Bib. Arch.*, Vol. VIII (1885–6), p. 28. The transcription *Malik-rammu* is wrong, *Ya-rammu* or *Aï-rammu* is the only right one, as Mr. PINCHES has shown.

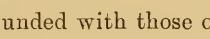
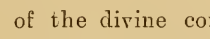
THE AUTHOR'S REPLY.

To the foregoing suggestive remarks of Prof. Hommel, I have but little to add.

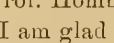
I fully accept Prof. Hommel's rendering of Kirbiš Tiamat as "the central ocean," *i.e.*, "the waters under the earth" (such has, indeed, been my view all along), but I still think that Kirbiš ought to be retained as part of the name, for it was apparently to distinguish Tiamat of the creation-story from *tiamat* or the ocean in general, that *Kirbiš*, "in the midst" was added to it.

Though quite inclined to accept Prof. Hommel's fuller renderings of *ṣimri* and *kubutti*, I should, nevertheless, like to see a determinative prefix to one or both of these words.

With regard to proper names compounded with those of deities the proportion in favour of certain of the divine components naturally differs with time and place. The god Sin was certainly a very favourite deity during the time of the dynasty to which Ḫammu-rabi belongs.

Prof. Hommel's reference to Kabti-îlâni-Marduk, son of Nabû-tabni-uṣur, variant Tabnîa, is very important, and is a parallel to my quotation from a tablet of nearly 1,700 years earlier (cf. p. 13, paragraph 3). In connection with the divine termination *ia* (*ya* or *aa*), I, too, have often asked myself, "May not Prof. Fried. Delitzsch be right, after all, as to the Sumerian (Akkadian) origin of Jah?" The character , *ni*, bore the name of *i* or *iau* (*yau*). In its reduplicate form the syllabaries indicate that it was pronounced *ili*, which is constantly found as the word for "God" in Archaic contracts (, *Na-ra-am-ili-šu*, "beloved of his god,"  , *Ili-i-din-nam*, "God has given, etc.), and *yau*, the name of the simple form (Assyr. , Bab.), might, upon occasion, have been read, in these strange names, instead of *ili*. Jah (*Yâ*) may therefore have been derived from it. I do not believe, with Prof. Hommel, that Moses knowingly transformed a form of the divine name  , *Êa*, the god of the earth, and of the waters beneath, into *Jahve*. Ea was, it is true, a creator, but he was apparently not so

much the creator of terrestrial things, as of the gods* (see p. 14). The earth and mankind were created by Merodach, aided by the goddess Aruru (see p. 5). If, therefore, Moses transformed a form of the name of the god Êa into Yahve (or Yahwah), he was ignorant of its being the name of "the creator of the gods," for this would have been much too distinctly polytheistic. At present we cannot bring documentary philological data such as will bridge over the gap between *Ea* and *Ia* (Yâ, Jah).

Prof. Hommel's derivations of Iltammeš from Šamaš and Ilteri from Išteri are very interesting. With regard to the former, however, the spelling  (Strassmaier, Nabonidus 554,4), where (*ilu*) "god," seems to replace , *il*, as well as the name , *Tammeš-natanu*, K. 961, 15, which is apparently the same name (though not the same person) as , *Iltammeš-natanu* (Strassm, Nabon., 497, 4), seem to militate against the derivation from Šamaš. For this and for Ilteri our cry must be "More light!"

I tender to Prof. Hommel my thanks for his kindly and learned criticisms, and I am glad to see that, upon the main points, we are altogether of one mind.

T. G. PINCHES.

August, 1895.

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* He was, however, also god of reproduction (see pp. 3 and 14).

ORDINARY MEETING.*

D. Howard, Esq., D.L., F.C.S., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Associates :—Rev. Pres. O. McCutcheon, D.D., Ireland ; F. R. Cowper Reed, Esq., B.A., F.G.S., Cambridgeshire ; J. James Ridge, Esq., M.D., B.S., B.A., B.Sc., Middlesex ; Rev. W. Sealy, M.A., Devonshire ; Rev. J. Tuckwell, Middlesex ; W. Watson Taylor, Esq., Middlesex.

Hon. Cor. Member :—Rev. C. V. A. Van Dyck, D.D., Pres. Syrian Coll., Beirut.

The following paper was read by the author :—

ITEMS OF CHINESE ETHICS AND PHILOSOPHY.

By Surgeon-General C. A. Gordon, M.D., C.B., Q.H.P., etc.

Syllabus.—Preliminary—Moral Philosophy and Ethics—The Sacred Edict—Ancestral Worship—Benevolent Institutions—Laws and Enactments—Punishments—Education—The Liberal Professions—On Witty Compositions—A Charitable Physician.—Chinese Proverbs—Respect for Labour—China in the Present—China in the Future.

Preliminary.

WITH reference to, and partly in continuation of, papers I have had the honour on previous occasions to submit to the Victoria Institute† I express a hope that the remarks I am about to offer may not be deemed altogether inappropriate. The object with which they have been collated and formulated is to exhibit some from among the numerous maxims relating to ethics and philosophy in accordance with which, Chinese civilisation has

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* 10th of 29th Session, 7 May, 1894.

† Notes on the "Ethnology and Ancient Chronology of the Chinese." V.I. Trans. vol. xxiii. "Philosophy, &c., in Ancient India." V.I. Trans. vol. xxv.

descended from ancient times even to our own day, and by which the special characteristics of that civilisation have been so definitely established. My present intention, however, is rather to enumerate than to comment upon and criticise those maxims; leaving such a task to others whose proclivities may lead them to undertake it.

Moral Philosophy.

According to Chinese philosophy all morality may be comprised under five heads, namely: duties between parents and children; between prince and subjects; husband and wife; elder and younger brothers; and, lastly, friend to friend.

With regard to these, it is stated on the authority of the sages that "the principle of obedience and submission in which the Chinese are educated from their infancy influences prodigiously their political government, and accustoms the people early to have the most profound veneration for their governors." It accustoms them early to venerate the administrators of the laws, with the very important proviso that this sentiment shall continue—so long as the actions of those authorities "are guided by reason." The rules of *Decorum* as to words and gestures, of which the works by Chinese authors are full, have introduced into the manners of that people a reserve, a complaisance, and a circumspection which prompts them in paying to every person the respect he has a right to require, and induces them to dissemble, or even to stifle a resentment.

1. *The duties of parents and children.* Father and son are enjoined to fulfil their mutual duties without interested views. The duty of a father is to correct the faults of his children; the inclination of a mother leads her to excuse them. Ill-judged indulgence on the part of a mother will result in the falling of her daughters into many errors. Harshness on the part of a father who only speaks to his children to reprove or find fault with them makes them fearful of him, and gives to themselves a painful perplexed air which never leaves them. The true character of a mother is to compassionate, but without blind indulgence, of a father to correct, but without unreasonable severity. These are the first maxims. Gently instil into a child lessons and instructions; let him not be spoiled by capriciousness, nor punished for trifles; he is as a tender bud from which the

flower will soon appear and flourish. Too great an anxiety about the health of children is an excess into which many parents fall. Has a young child the least indisposition, he is immediately surfeited with medicines and cordials; his constitution thereby ruined, his health impaired, his days shortened.

"When a daughter is born into a family," so says the code of philosophy now quoted,* "it is to leave it, and soon pass into another." If then, her education has been neglected, "she is a reproach to her parents, and does a great injury to the family into which she enters."

Among the duties of a wife which may be appropriately alluded to are these: "To pay a respectful obedience to her father and mother-in-law; to live in perfect union with her sisters-in-law." [Please to observe we are referring to the Chinese, not to the more advanced condition of such matters in the highly favoured islands of the western seas.] To honour her husband (assuming of course that he is worthy of honour); to instruct her children. to compassionate her domestics (whether slaves or servants); to prepare the silk and fit it for working† (equivalent to attending to the family wardrobe); to be a frugal and laborious housewife; to patiently bear crosses and annoyances; not to listen to tittle tattle, nor meddle with that which is outside her doors—in all of which a daughter should be instructed before marriage.

On the part of a son obedience and respect towards his parents; in other words to "honour his father and his mother," is held to be the most important of "the five duties of civil life." If the father treats the son well, the son will behave well towards the father. But though the father is not such as he ought to be, the son should not be wanting in duty towards him.

2. *Duties among brethren.* — According to an ancient (Chinese) proverb, "When brethren live together they ought to support themselves," there should in fact be no idlers among them. Harmony between brothers and their families is a source of happiness; and among the ways to so maintain it are these:—"to hear a great deal, yet to seem as if one had heard nothing; though seeing many things, yet behave

* See *Du Halde*, vol. ii, pp. 37, *et seq.*

† Equivalent to the duties assigned in olden times to British maidens, whence also the term *spinsters* which still clings to them, though but in name.

as if one had seen nothing; not to let one's thoughts be taken up with trifles." [Maxims still followed by experienced administrators in other countries than China.]

3. *The duties of husband and wife.*—When marriage is being treated of, the principal thing to be regarded is whether there is likely to be sympathy between husband and wife, a point too often disregarded; convenience, rank, position, or ancient family alliances being only thought of. The young bride is sometimes to be pitied; she may come of a wealthy family into one whose affairs are in great disorder; she may see coldness on the part of her husband without daring to complain; she may be near her mother's house, yet unable to see or talk with her, and then, the more she was cherished at her own home, the more she feels her present condition.

"When is it," the question is asked, "that a woman despises her husband?" The answer given is, "When she is puffed up because she has made his fortune," in other words, brought riches to him who had none of his own, whether by inheritance (the *unearned increment*), or as the fruits of his labour. As for the husband, his true character is firmness in maintaining good order in his family.

4. *Of the duty of friends.*—However strict the union between friends may be, a word dropped by chance may offend delicacy. What course shall you follow? Why! dissemble, and let it pass as a trifle; take great care not to give a harsh answer, or to make the first person you meet with the confident of your resentment. Nothing is more easy than for children as they grow up to contract the usages and customs of their parents, who, if they are laborious, industrious, and frugal, the young man will form himself by their examples; and on the contrary, if they are given to vanity, merry-making, and pleasure, he will soon fall into their extravagances. If, from example of his companions, vice shall take root in his young heart, it will be difficult to eradicate it. Therefore, court the company of a wise man. When you pitch upon a friend a hundred good qualities are seen in him at first, but when you are habituated you discover in him a thousand faults. (Few persons stand knowing.) During the lifetime of our acquaintances we speak of nothing but their faults; after their death, nothing but of their praises. He who treats his living friends with the same esteem and affection which he would express for them if dead, will reap great benefits in friendship. My friend, who was in a poor and obscure position, suddenly finds himself in the midst of splen-

dour and plenty. I ought to sound the present disposition of his heart. If I should treat him with my ordinary familiarity it is to be feared that he will give me a very cold reception, so as to keep me at a distance. On the other hand, my friend who was rich may fall into poverty. After such a change of fortune I ought to treat him with greater regard than ever, otherwise he may suspect that I affect an indifference in order to break off all correspondence with him. "Friendships," say the ancients, "that are formed slowly, and without much ceremony, are commonly durable."

5. *Of the duties of kinsmen,*—To disregard or disown kinsmen is great pride and vile ingratitude; to protect them when they need assistance, and succour them in misery is the effect of great virtue. "If I be in a condition to do a poor relation the service which he expects of me, I ought to do it generously, and enhance my good office with the obliging manner of doing it." In such a matter "consult your heart and your abilities, and do the best you can to give assistance." Above all, promise nothing but what you mean to perform. How are mutual misunderstandings between relations and neighbours to be guarded against? It is by bearing with each other, and remembering that if your friend has some troublesome qualities you have the same which he must pardon in his turn. But if he pretends to domineer in every little dispute, that is the way to perpetuate feuds and enmities. If in company you boast of being akin to a rich and dignified relation, and speak of a poor, despised, and ragged kinsman in contemptuous terms, as *my beggarly cousin*, etc., and seem to disdain a relation because he is in misery—how shameful is this. How many do we see who build temples, entertain in their houses companies of frivolous people, who spare nothing in play and self-indulgence, yet grudge the smallest sum to meet the necessities of an indigent kinsman. The wheel of fortune is in continual rotation. Can you promise to be a long time prosperous, or shall your now despised relations be always in misery? May not they in their turns mount to high offices and dignities? May not your children and grandchildren, when you are gone, stand in need of their assistance; then what services can they expect from those about whom you have been so indifferent. [From this last quoted maxim the fact seems manifest that in ancient times conditions in China were not so very dissimilar from those indicated by the Cheshire modern proverb to the effect that "it is only three generations from clog to clog."]

Following the enumeration of ethical principles from which the above rather copious extracts have been taken are others the bare enumeration of which must here suffice, namely: On the government of the heart; accomplished behaviour; love of learning; the conduct of an honest man; the manner of governing the house; caution necessary in our discourse; duties of private life; perseverance in good works; manner of behaving in life; and so on.

The Sacred Edict.

Towards the end of the year 1671, and in the reign of K'ang-Hsi, second emperor of the present dynasty, a code of ethics, derived from experience, handed down from ancient times, was published for general guidance throughout the empire, the express object in view being "to humanise the sentiments of the people, and to stimulate them to virtue." Sixteen different maxims are laid down in "the Sacred Edict,"* for such is the title given to the code in question, and these may here be briefly alluded to as follows, namely:—

1. "Practice sincerely filial piety and fraternal love, and thus give support to social relations" [to which are appended explanatory notes of what is intended to be the special obligations so implied, including dignity of manner, loyalty, considerate demeanour towards others, bravery in battle, etc.]

2. "Maintain the bonds of relationship, and so render manifest concord and union." Every person should pay consideration to those immediately near him, even as he attends to "the four members and the hundred parts of his body, of which the (blood) vessels should communicate with each other and so be mutually affected whether under affliction or pain." [In other words, "Love thy neighbour as thyself."]

3. "Live in peace with your neighbours," and so avoid litigation. To which the commentator adds: "Concord between relations, good understanding between allies, fidelity between friends, and charity:—let these be always held in honour."

4. "Hold in honour agriculture and care of the mulberry tree, and so assure both food and raiment"—these two essentials of the people. In ancient times the sons of Heaven tilled the ground with their own hands, while

* *Le Saint Edit*, par Théophile Piry. Shanghai, 1879.

empresses personally attended to the mulberry trees. As for soldiers, "they have not to deal with agriculture, but inasmuch as every thread of their clothing, every grain of their rice, as also their pay are all raised by the people, so they should live in peace with the population, and in every way protect them, so that they may live and conduct their labours in peace." Further commentary says, "Molest the indolent and lazy; recompense the industrious workman; let no field remain unused; let no vagabond be in your cities; if crops are abundant let there be no prodigality, nor neglect to keep back a reserve."

5. "Prize order and economy, and save out of your riches," so as at a later period to meet unforeseen expenses. "Riches are like the water; economy like the embankments by which it is contained. Interest on borrowed money speedily equals the capital, and as the debt thus increases, hunger and cold can no longer be averted. Live in peace, content with your lot; the mouth full, the stomach satisfied, and so realize the supreme object of your desires—the improvement of manners, and reform of the people."

6. "Extol university education with the object of directing the studies of the lettered classes." But let the man of letters be in demeanour and costume a pattern to his fellow citizens; let him learn to respect the rites of justice, and carefully preserve the codes of decency and honour; avoid being carried away by high theories to the neglect of individual duties. The glory of a university depends much upon the maintenance by its chief of the rules relating to order and discipline; but still more so upon the care with which the student watches over himself and his good name. The savant and the labourer have not two separate destinies; he who labours with his hands, who searches for, and applies to his own use true principles, is also a savant.

7. "Disparage every foreign sect, and so exalt the orthodox doctrines" [namely, those pertaining to China]. Man has but to follow the established rules of daily conduct, conform to social relations and to the fundamental virtues; but the search after the unknown, and the practice of the marvellous are not admitted by the pious philosophers. As for books which are not the works of philosophers, and non-conformist rituals, these terrify generations, and deteriorate public manners. Three religions have come down from the ancients, and beyond the School of Letters (Confucianism) there still exist the sects of Taoism and Buddhism. As to

the Western doctrine which exalts the Master of Heaven it is equally contrary to the orthodoxy of the (Chinese) sacred Books; it is only because its apostles are deeply versed in mathematics that the State employs, but does not acknowledge them. False doctrines which deceive the crowd are not excused by the law, and punishments are decreed against the charlatans who practise such dangerous artifices—and more to similar effect.

[The limits within which such a Paper as the present must of necessity be restricted render it impossible to enlarge upon the considerations presented in this paragraph. It is, however, of so great interest, more especially in relation to work being carried on in China by many devoted Christian missionaries that, according to my individual opinion, it may appropriately be taken up either before this Institute or by some other kindred society.]

8. "Explain the laws, so that the ignorant and the obdurate may be warned." Though the significance of the laws is profound, their purpose is in conformity with the human sentiment; but in place of punishment after crime, better is it to give warning in advance, for which reason, public proclamation of the laws is ordered to be made from time to time.

9. "Show the excellence of rites (ceremonies) and of decorum." Although the universality of man possesses by nature the five cardinal virtues, yet among individuals so many differences exist as between politeness and rudeness, slowness and vivacity, in the manifestation of passions and desires, coarseness and refinement, that wise men of old established rites and formalities in the observance of which all men should be equal. Then follow minute details in respect to them—the ultimate object in view that, "the public manners being tempered by charity and softened by justice, may be rendered generous and pure."

10. "Apply yourself to occupations such as are essential to determine your position in life." Seeing that "the Superior Heavens" give to man his being, and assign to each individual a definite position, in which it rests with him to establish himself; that in human nature there exists marked differences, as between wisdom and simplicity, strength and weakness, there is no person who may not seek for a position in which to secure himself. Whether as men of letters, cultivators, artisans, tradesmen or soldiers—whatever be the differences of your several conditions, you have all your

obligations to fulfil, and in that respect you are all alike. On application depends success of labour; on diligence, increase of possessions. Then follow special maxims for each of the several classes enumerated, by the practice of which it is added, "no person need again fail in their essential duties; but while fulfilling their duties in accordance with the traditional condition of their families, transmit to their descendants riches and abundance. their own ultimate reward being comfortable enjoyment under a resplendent heaven and a pure sun."

11. "Instruct the young, that so they may be prevented from committing evil." From ancient times this was effected partly by means of scholastic education, partly by military training. [But apparently this particular maxim contains only such instructions as apply to boys and men, to the exclusion of daughters.] To the father and elder brothers pertain the task of developing virtuous inclinations in the young, and of suppressing vicious instincts. As for thoughts of filial tenderness, and of respect to elders, "every man possesses these, implanted in himself." If he love virtue the village child may rise to nobility and grandeur; if not virtuous, the son of the high noble will fall to mediocrity and shame.

12. "Suppress false accusations, and so safeguard innocence." [Equivalent to command against "False Witness."] As examples of such accusations, the following are enumerated, namely, "Plotting in secret; false statements under the guise of truth; raising discord; casting upon another blame which attaches to one's self; mixing the good with the bad, the just with the unjust, and so creating an erroneous impression—in the phraseology of the Edict itself, "calling up a shadow, or binding the wind."

13. "Report harbourers of deserters, so that they may be stopped in the practice, and implicated in the crime." Herein is included an epitome of duties pertaining to the military classes, and of the deceptions practised by deserters (whose numbers in former times were evidently very considerable) to conceal their identity. "Between the master and the servant there exist great mutual obligations, and the fugitive who turns his back on his master abandons his contract."

14. "Be exact in payment of your taxes, including those which are devoted to official ceremonies, as also the hundred other secondary expenses. A prince must necessarily levy

all his expenses upon his people, and it is a duty for the inferiors to offer them to their superiors. The granaries and treasury of a prince wherewith to feed his people in time of dearth, could they exist were the object of taxation no other than to plague the people, and to supply his own wants? To levy with mildness, to demand little by little, and to be liberal in benefits to the multitude are the virtues of a prince. To serve superiors, to consider public affairs rather than private interests are the duties of 'the masses.' But in order that you may pay your taxes, play not with idleness, it will render sterile your works; be not extravagant, nor dissipate your riches."

15. "Organise yourselves in communities with a view to exterminate brigandage and theft." Such communities have consisted from ancient times, first of ten families (a *Chia*) over which a dean, then ten of those united (a *Pao*) under a chief [otherwise so many village systems with their respective office bearers]. Among other instructions under this head, the following is noteworthy. "In towns and cities persons are to be met with who, instead of occupying themselves with honest work assemble together to drink, to play, to fight cocks, and race their dogs, some meeting in the evening and not dispersing till dawn, their antecedents obscure, their movements doubtful." Against such as these this maxim contains precise instructions, whether on shore, or in fleets occupied by them on rivers,* and at sea as pirates.

16. "Moderate your dislikes, so that you may take count of the value of life." Man has a body in order that he may fulfil his essential duties, to cultivate the land, to serve his father and mother, and nourish his wife and children. But by nature he has his crosses which he can neither change nor get rid of. If he once gives way to his "instincts," and they are so let loose, he may try in vain to get them again under control; anger may arise in an instant, and become an inveterate hatred (between two persons) seeking mutual vengeance, ruin, or murder, the cause insignificant, the evil immense. The Heart of Heaven and Earth loves the life in its creatures, but many thoughtless persons know not how to take care of themselves, and treat life with frivolity. If we seek for the causes to which are due the great misfortunes of life, we find the most frequent to be the abuse of wine; of ten murders, five or six result

* That is, the regular river population whose home from time immemorial has been their boats.

from mutual injuries while under "the empire of wine," while worse still the evils affect their wives and children, and extend among their surroundings. Therefore correct yourself so that hasty action in a moment of anger may not bring remorse in the future. "Know how to bear for a moment," says the (Chinese) proverb, and "and so safeguard your own person." Finally, it is added, "Follow these lessons, handed down from ancient sages through thousands of years, that in peace and prosperity you may advance along the path of humanity and of long life."

These then are examples taken from the code of ethics in accordance with which the teeming millions, which compose the population of China, have lived and flourished, while elsewhere nations and peoples have sprung into history, advanced, culminated, and disappeared; and still the Chinese are active, and in a particular sense "progressive."

Ancestral Worship.

From a date coeval with and probably anterior to that of the prophet Samuel, B.C. 1139–1061,* Ancestral worship has been looked upon by the Chinese as a sacred rite; at some of the festivals connected therewith, the dead being personated by a younger relative who was supposed to be taken possession of by the spirit of the departed, and thereby become his visible image. A hall of ancestors exists either in or immediately adjoining the house of every member of a family, but more especially in that of the elder son. Tablets to the deceased, bearing suitable inscriptions, are therein arranged in chronological order, incense and papers are daily burned before them, accompanied by a bow or other act of homage on the part of the worshiper, forming in fact a sort of family prayer. In the first part of April, one hundred and six days after the winter solstice, a general worship of ancestors is observed under the euphonious name of "worshiping on the hills"† or "sweeping the tombs;" sacrifices and libations, candles, papers, and incense for burning being then offered, while the people go through a variety of ceremonies, and offer prayers. The graves are at the same time swept and repaired. These observances are described as indicating more nearly than anything else connected with the people an approach to a veritable religious sense among them.

* Reign of Te-yeh, 27th emperor of 2nd or Shang Dynasty.

† The sides of hills being favourite sites of sepulchre.

Even to a stranger there is something in the ceremonies alluded to which is calculated to attract his respectful attention, nor can the foreign onlooker avoid a hope that the merits of the ancestors so honoured were such in life as to deserve the veneration so manifested at the tombs and temples dedicated to their memory. As to the actuating sentiment of which the observances in question are the outcome, it seems to me akin to that which in western lands finds expression in monuments such as ornament cathedrals and churches, and in more humble manner strews periodically with flowers the graves of those whom we had loved. Is not also the sentiment from which originated genealogy and heraldry similar to that out of which sprung ancestral worship in China?

Benevolent Institutions.

As a result of the several codes of ethics and of morals under which their character as a people has been moulded throughout the long period of their history, the Chinese have from very ancient times manifested their sympathy with suffering and destitution, by means of institutions the object of which has been, to supply particular classes of persons with their special requirements. The gentry often subscribe towards publishing and disseminating as advertisements, exhortations to the masses of the people to lead a moral and virtuous life. In the larger towns commemorative arches and gateways are erected in honour of widows and other persons whose virtue was conspicuous. While the methods of collecting the regular poor rate are direct and economical, they are so regulated as to offer no rewards to idlers and tramps. In some of the most important cities (among them Peking) some empty granaries are placed at the disposal of beggars and the extreme poor, to be utilised by them as gratuitous lodgings.

In former times there existed throughout the empire granaries into which a specified proportion of grain had to be deposited periodically, and so a reserve kept up to meet the requirements of famine seasons. In such emergencies gratuitous distribution of rice and other kinds of food, and of clothing took place under orders of the government. Soup kitchens are established under charitable organisations, and by private individuals, and to certain classes of persons food is sold at cost price. In times of pestilence persons are

permitted to witness gratuitously theatrical performances, and displays of fireworks, the object being that their minds may be distracted thereby from the prevailing epidemic. In the larger towns there exist hospitals for the aged and infirm, and also for orphans, for the blind, and for lepers. Societies for the prevention of infanticide are common all over the empire, as also for recovering the drowning, and for the burial decently of pauper dead. There are hospices into which are received not only deserted children but those of very poor parents, who are voluntarily given up by them permanently or for a time. With regard to the latter, it sometimes happens that children who are voluntarily parted with, as in times of severe famine, or inability on the part of their parents to provide them with food, are again claimed when the particular emergency has passed away. In such instances their legal right to their own children is at once acknowledged by such institutions, and they are handed back to them.* It has been asserted that fewer children die in the Chinese orphanages than in those of certain French establishments in China, for the reason that they are better nursed and cared for. In the large cities places are provided in which those who in desperation give up the battle of life may quietly lay themselves down to die.† At one time societies with that object in view afforded the necessary aid to such as desired to "sacrifice themselves to the manes of their ancestors," otherwise to commit suicide at their tombs, under the belief that illness is caused by maleficent spirits of the dead. A yearly service is performed, called *Foo-ying-k'ow* or "appeasing the burning mouths" with the object of conciliating those spirits.

Laws and Enactments.

Such as the laws of China were when codified during the period of the Chow dynasty (B.C. 1122–255) so in substance have they continued down to the present day, with but inconsiderable modifications. This penal code so come down from high antiquity has been described as "remarkable for

* In the case of Roman Catholic orphanages it would appear that a similar rule does not obtain. In them children who have been once baptized are not restored to parents or relations. Hence, it is said, arose the misunderstanding which in 1870 led to the massacre of French priests and nuns at Tientsin.

† In 1860 I saw one such place in the city of Shanghai.

its reasonableness, clearness, and consistency, for its business-like brevity, the directness of its provisions, and for the moderation of the language in which they are expressed. In spirit the law does not countenance some of the customs that disgrace humanity in China, notably infanticide, where that crime exists; neither does it countenance the atrocities of which, at various periods of history, governors and princes have been guilty.

There is no public ministry connected with the state tribunals, nor are lawyers employed, as among western nations, except in cases of murder. The plaintiffs or defendants state their own cases, or cause them to be explained by others, and the magistrate, assisted by two assessors, pronounces an equitable judgment; the decisions are public and the audience is said to be occasionally consulted.* In the more ordinary cases complaints are adjudicated by the families of those concerned, only the graver ones come before magistrates.

It is argued in China that men cannot properly be punished for what they do not know; also that they will be less liable to incur penalty if they are duly made acquainted with the prohibition. Accordingly, the sixteen discourses already referred to as "the Sacred Edict" are periodically read to the people. This is what has been called *preventive* justice, in contradistinction to *punitive* justice.

Historians observe the remarkable fact that the following maxim by the Chinese is often quoted by themselves, namely, that "to violate the law is the same crime in the emperor as in a subject." In the administration of the law the principle is held that "it is better to let even the guilty escape than to punish the innocent."

By an ancient custom of the empire, specially appointed *Censors* are privileged to present any advice or recommendation to the sovereign. But in practice punishment has been awarded them when their advice was unpalatable to the ruler. The persons so appointed seem to be altogether in a different position from that of Ministers of State.

Punishments.

Among the Chinese the punishment attached to the greater crimes is death. For those of less atrocity they are of various degrees of severity, but all exceeding

* That is, it becomes collectively a jury if so consulted. But on this point statements differ.

those awarded in Europe for crimes of corresponding magnitude. In addition also to the punishment directly inflicted on the immediate culprit, his dependents and family suffer disgrace and ruin, and in all cases the evil repute of the father descends to the sons.

Confession by the guilty party is indispensable before the penalty of death is pronounced, and a criminal is often returned to, and kept in prison until he confesses, although such a course is not actually legal.

A third conviction for certain crimes, including theft of a sum equal to £8 sterling, rape, adultery, and murder, are punished with death. An accessory is punished with the same rigor as the principal. Political crimes are considered as the greatest of all; the more serious of these are punished with death, often of a cruel kind, those of minor degree by transportation to Ili, the Chinese "Siberia."

All death sentences must receive the sanction of the emperor who, it is said, observes a fast of three days before examining them.

A peculiarity of Chinese punishments is that under particular circumstances they may be vicariously inflicted; another, that legal suicide is a recognised institution.

In spite of the professed rigor of the law, death sentences are believed to be relatively rare. Provinces of corresponding size to England and Wales have not more than from twelve to fourteen a year, and in some others equally large, none have been pronounced for several consecutive years.

Education.

A system of national education has existed in China from very ancient times, the system at present in force having been substituted in the fourteenth century of our era* for that previously followed. According to the ideal of education which has come down from such distant date in that great empire—the true end of study is virtue. To this ideal a scholar should apply all his forces in the same manner as he who draws a bow aims at a mark. But "above all things young people must be prohibited from reading romances, comedies, verses, or obscene songs; these books corrupt the heart insensibly, and contribute to the loss of good manners. It is a shameful thing ever to have read them

* Namely, by Houng woo, founder of the Ming Dynasty, A.D. 1368-1398.

with pleasure; and bad discourse, if it enter into the ear of a young scholar remains all his life after in his heart.*

On the subject of education of young men the principles laid down in "the Book of Rites" are to the following effect, namely, "When able to talk, lads must be taught to answer in a quick bold tone, and girls in a slow gentle one. At the age of seven boys should be taught to count and name the cardinal points. At eight they must be taught to wait for their superiors, and to prefer others to themselves. At ten they must be sent abroad to private tutors, and there remain day and night, studying writing and arithmetic, wearing plain apparel, learning to demean themselves in a manner becoming their age, and acting with sincerity of purpose. At thirteen they must attend to music and poetry. At fifteen they are to practice archery and charioteering. At the age of twenty they are in due form to be admitted to the rank of manhood, and learn additional rules of propriety; be careful in the performance of filial and fraternal duties, and though they possess extensive knowledge they must not affect to teach others. At thirty they may marry, and begin the management of business. At forty they may enter the service of the State, and if their prince maintain the reign of reason they must serve him, but otherwise not. At fifty they may be promoted to the rank of ministers; and at seventy they must retire from public life."

And what are the results assigned to the system of education in China? That the general prosperity and peace of that vast country have been very much promoted thereby. It is especially deserving of notice that among the hundreds of millions who constitute that empire almost every man can read and write sufficiently for the ordinary purposes of life.

So sensible are the people of the advantages of education that their language is full of maxims in reference to it, such as "Bend the mulberry tree when it is young." "Without education in families, how are governors for the people to be obtained," and so on. Every town has its public place of instruction, and wealthy families have private tutors. Education is made as general as possible, that which is moral being put far beyond what is merely physical, although the latter is by no means neglected.

Coming down to almost the present day, it may be interesting in this place to advert to the principles of

* *Du Halde*, vol. i, p. 383.

education dictated by TSENG KUO-FAN the father of the late Marquis TSENG, a recent honoured representative in this metropolis and country. The principles so indicated were these [applicable to women and girls, as well as boys and men], namely:—1. Preparedness for examinations. 2. Weaving. 3. Early rising. 4. Cleanliness within and outside the house. 5. Reading. 6. The culture of vegetables. 7. The care of fish and of swine.* Thus we perceive an acquaintance with subjects in certain countries looked upon as menial, holds in China a place with such as are comprised in the highest order of education.

[In relation to this part of the general subject I may, within parentheses, allude to the most recent report published on the substitution of the method of education described in the preceding paragraphs, by that which finds favour in our own country, the place in which this took place being our Chinese colony of Hong Kong. According to the report in question, "As regards education, we deeply regret that we cannot sympathise with those to whom it seems the panacea for all ills—native or foreign. No greater mistake was ever made by the undoubtedly well-meaning but sadly mistaken officials who have during the past two decades controlled the destinies of our Eastern colonies than their support of the Education fad, which has so utterly spoiled the lower classes in this country. To teach the small Chinese or the small Briton the Three R's is commendable enough. To teach him more is to unfit the pupil for all that is known as menial work. The result, in Hong Kong and the Straits Settlements, is not to raise a race of intelligent servants or artisans, but one whose members despise all but 'genteel' employments. Clerkships—Government clerkships, if possible, but clerkships, at any rate—are alone sought by the little Orientals, whose fathers were happy to earn a few cash daily for many a long hour of work. Who cares to become a 'boy' coolie, or godown-keeper, when he can rival the young European in writing and book keeping, knows history,

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* *New China and Old*, by Archdeacon Moule, p. 151. Apropos to the above the following comment on a treatise on land law pertaining to Cheshire 50 years ago is given, as in its spirit nearly approaching the principles here laid down, namely:—"Man to the plow, wife to the cow, son to the mow, girl to the sow, and the rent was netted." And its counterpart:—Man tallyho, girl piano, son Greek and Latin, wife silk and satin, and—the farmer gazetted." But China's yeomen and their families are a long way behind the condition so indicated.

geography, and mathematics twice as well, and not infrequently can beat him at English composition? Thanks to faddists, we are doing our best to destroy the chances of the average British boy by educating native youngsters, who will take half the salary and live on a quarter of the sum deemed necessary by a British youth. The 'educational needs' of the Chinaman are about met by the native 'Sin sang'—if he is to remain in his present position, *quâ* the European. If he is to fulfil his apparent destiny of supplanting the latter in both the east and west, education must, of course, have full swing. But we hardly think the world, or at all events, Great Britain, is as yet ripe for this policy."]

The Liberal Professions.

The professions termed liberal in Europe, are in China on the same level as handicrafts, the members of both receiving remuneration according to a similar scale. Thus the occupations of life are reduced to two categories, namely, those connected with the Mandarinate (official classes), and those relating to trade. The first-named of these is open by means of competitive examination to all classes with four exceptions*; and in various instances its members voluntarily reverting to the second.

Science and Letters.

Above the equality of handicrafts and professions however stand pre-eminently professors of science and letters, for nowhere are they respectively more highly honoured than in China, where old age is the only qualification placed on a level with them. Some members of these two classes become tutors, public writers, professors, &c.; others turn to commerce and agriculture, and in these various capacities contribute to raise the intellectual standard of the people. But alas! of some it is stated that "they prefer to await a chance, looking out for someone's disgrace and dismissal —intriguing like the unclassed, and becoming perfect pests"—loafers in fact! objecting to, or incapable of honest handicrafts.

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* Namely, descendants within three generations of prostitutes, actors, executioners, and jailors.

On Witty Compositions.

With reference to books by literary men—It is declared to be a dangerous affair to make comedies, romances, verses, or other witty composition where, in enigmatical, dark terms, the most eminent reputations are attacked. If such compositions are communicated to you, take care not to discover that you have seen them. A man, after long and serious reading should rather apply himself to a search into the secrets of Nature, politics, or the art of rightly governing the people" (rather than such pursuits as are above alluded to). "I cannot endure"—so the dissertation* runs—"certain expressions that are scattered through some books and which never should be employed by an author who values himself upon knowledge and politeness." But "I do not blame a man for using terms that best testify gratitude and modesty." Now, the writer despondingly adds—"the fine sentiments which our sages have transmitted to us are no longer laid before the reader, authors study only to divert and amuse agreeably by witty strokes. Where is the advantage of such writings?"—It is not my present object to inquire as to what extent these observations apply to other peoples than the Chinese to whom they were primarily addressed.

A Charitable Physician.

The following seems suitable for quotation in this place, viz.: In the "Collection of Maxims, Reflections, and Examples of Morality" allusion occurs to the characteristics of "a charitable physician," namely:—"Yen Yang had by his application rendered himself a very skilful physician; but it was with a view to exercise his profession in charity. He not only never refused his medicines to any who asked them for their diseases, but if the patient was poor he also gave him some charity that he might procure the necessary aids in his sickness." A second instance was that of Kin Ko—"a physician of great skill, to which he added great disinterestedness and an uncommon charity. Whoever called him he immediately ran to assist them, and this at all times. He saved the lives of a vast many poor children, and he had a singular talent for this. If any poor patient stood in need

* *Du Halde*, vol. ii, p. 67.

of *jin seng*,* or any more costly remedy he furnished it at his own expense; he thereby saved the lives of a great number of poor people." From which the fact appears that in China, as elsewhere, charity and philanthropy were personified in the worthy professor of the art of healing.

Chinese Proverbs.

Allusion has already been made to some out of many maxims by which the Chinese are supposed to regulate their life and conduct, or to refer to, as in other countries, doubtless for no other purpose than to round a sentence in conversation. A few only of these may now be given, namely:

According to Laotse, the Epicurus of China. "Let us drink while we have wine; the sorrows of to-morrow may be borne to-morrow." In other words, "Dum vivimus, vivamus." And yet as a fact the Chinese enjoy the reputation of being temperate as regards both wine and spirits. [Laotse flourished about B.C. 604; Epicurus, B.C. 342–271. Contrast both with St. Luke, A.D. 55–70. See his Gospel, chap. XII, 16–21.†]

"If the blind lead the blind they will both fall into the pit." Of which a counterpart is to be met with among all nations, ancient‡ and modern.

"One thread does not make a rope, nor one swallow a summer." Identical in respect to the last clause with our common English saying.

"Good iron is not used for nails; ivory is not made of rat's teeth, nor soldiers of good men." The final part of this saying being, as everybody knows, totally inapplicable to those of Britain.

"To climb a tree to catch a fish." Misdirected labour.

"Like cuckoo in a magpie's nest." To take unfair advantage of another's work.

"An old man marrying a young wife is like a withered willow sprouting."

"When the tree falls the monkeys flee." (Rats leave a sinking ship.)

"Prevention is better than cure"§ (an universal proverb).

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* Root of *Panax quinquefolia*, an esteemed and costly drug.

† "Take thine ease, eat, drink, and be merry. But God said unto him, thou fool, this night thy soul shall be required of thee."

‡ See St. Matthew's Gospel, xv, 14.

§ *Middle Kingdom*, Williams, vol. i, p. 720, *et seq.*

"Doubt and distraction on earth; the brightness of truth in heaven."

"Better the upright with poverty, than debased with abundance."

"Better not be than be nothing."

"The life of the aged is like a candle between two doors, easily blown out."

"The blind have the best ears, the deaf the best eyes."

"He who is willing to inquire will excel, but the self-confident will fail."

"Anger, like a little fire, if not quickly checked may burn down a lofty pile."

"Too much lenity leads to crime."

"If you love your son give him the rod; if you hate him pamper him with dainties."

"The higher the rat creeps up the cow's horn the narrower he finds it."

The following has reference to a very numerous and somewhat ostentatious class of persons—let us say for the sake of euphony—in China, namely:—"He who bestows his benefits upon those at a distance to the neglect of those immediately near him is like a man who raises his lamp on a high pole; it is seen from a distance, but underneath is dark"; of which a Spanish counterpart is that "Darkness is densest under the lamp."

The author of the following betrays therein the result of his association with "the world." He who withdraws to the side of the waterfall and of the purling stream among the mountains, returns to the original goodness of his nature. (According to the doctrine of Confucius man was born good; it was by association with his fellows that he fell away from his high estate.)

Lastly, as I began this short series of "wise saws" with an allusion to wine, so also I conclude, namely:—"A thousand friends will drink your wine when fortune's sun shines bright; none remains to sympathise when falls disaster's night." Regarding which I refrain from comment.

Respect for Labour.

Respect for labour is a cardinal principle in Chinese ethics. With that people labour is held to be the natural inheritance of man, as it is of all created beings. It is a condition of nature, and the essence of man. "It is a necessity; but

when its end is not understood it becomes a punishment." Labour, whether manual or mental, is held to be the duty as it is the privilege of man. From times the most ancient this has been so; agitators and others who oppress the workers have been execrated, while the national characteristics alluded to continue even to our own day. "To stop the hand is the way to stop the mouth." Such is the teaching of a Chinese familiar proverb. In a country where the youngest cannot afford to be idle, there is observable among the young an air of staid gravity quite beyond their years, the reason being that they are early under obligation to take their parts in the serious business of life. Man, according to Chinese philosophy, is from the nature of his being, a creator and a worker. The sure way of ennobling labour is to show its intimate agreement with natural laws; but the operation of these laws must not be set at nought by other laws, civil or political. Hence, the moderation of the taxes, and the property system which grants the labourer the value of all he has created; the freedom and honour accorded to labour and the labourer; the absence throughout the land of persons independent of labour, of the luxurious classes, and of slaves or serfs.

In certain industries it is a common custom for the masters to associate their principal workmen with themselves by giving them a share of the profits, while others adopt the system of piece work. Fixed wages are unusual in industrial or agricultural work; and the greater number of individuals and families work for their own direct benefit instead of being salaried.

According to a Chinese song, "When the sun begins his course I set myself to labour; when he descends below the horizon I sink into the arms of sleep. I quench my thirst from my own well; I feed on the fruits of my own fields. What can I gain or lose by the power of the emperor?"*

The influence of doctrines such as these, by hereditary descent through many generations, has been to stereotype in Chinese character a fitness for steady industry and perseverance, which, when accompanied as for the most part it is by extreme frugality of habits, renders the individual thus trebly endowed, the dangerous and often successful competitor in industry, which the Chinaman has

* Abbé Grosier, vol. ii, p. 378.

proved himself to be. In his own country, and more especially in some of its largest cities, it is no uncommon thing to see one portion of a family of artisans pursuing their special occupation throughout the entire hours of daylight, other members take up the same work at nightfall, to continue it till morning; and so on uninterruptedly, for they know not the Sunday's rest.

[There are a good many restrictions upon labour in China which working men in western countries would not care to submit to. Combinations of working men are recognised by law; in fact they are to a certain extent insisted upon, and a man who does not belong to some union or other finds difficulty in getting work, except in special skilled handicrafts. Labour troubles and distress due to a congested state of the local labour market are unknown. Indeed, trouble of any kind is rarely experienced, for labourers are strictly confined to the districts where they are employed. They are allowed to go where they please; but no labourer can be employed outside the boundary of his own district. He may, upon making application to the labourers of another locality, be allowed to join them, but it must be by general consent of the majority. In that case he is transferred, and may not then work in the former district to which he belonged. This arrangement is found to work extremely well. It prevents the swarming of unskilled labour into markets already supplied, and yet allows of transfer from one part to another where the resident workers are not opposed to the new comer. It may not suit western notions of perfect freedom, but the result, summed up by the United States Consul—"Trouble is rarely experienced and strikes never occur"—is one that many western states would give a good deal to secure within their own borders.]

China in the Present.

Although the great empire to which the preceding remarks more directly apply has been slow to adopt the policy of what in western nations is called progress, it has been by no means stagnant. For example, the gradual introduction of literature which tends to explain the science and leading features of social life in other countries must of necessity affect the train of thought by which during some thousands of years past, the ruling classes and the people

in general have been educated. A few other innovations may be simply enumerated. These include the adoption of warlike appliances according to European models and plans, European machinery and factories, ship-building, docks and arsenals, the manufacture of guns and ammunition, the establishment of a regular fleet of mercantile vessels, the electric telegraph from north to south, and from east to west across the empire, a mint (at Canton) for the manufacture of dollars, and at this moment a medical college is being organised at Tientsin. Mining for metals and coal has moreover been extended throughout the empire, and emigration on a large scale is in progress to Manchuria where colonies of Chinese cultivators are being established.*

China in the Future.

But it is recognised that China's progress is beset by difficulties and dangers, some so serious in import that it is to be hoped their significance may be recognised by the responsible authorities ere the clouds now threatening burst upon her. The chief of the difficulties thus alluded to are considered, with more or less reason, to arise from the following circumstances, namely: Her merely passive political existence is at an end; she is now in contact with the three great western powers (Russia, France, and England)—all superior to herself, and looked upon by each other as restless and over-reaching, hence she must either resolutely knit herself together or run the risk of being broken up. Whether there be nerve and public virtue enough in those authorities to enable them to play the new part so indicated remains to be seen. Should the future prove that they are not, then, China is destined to undergo a process of dismemberment and compression, not sudden or violent, but inevitable.† What are the means by which such a catastrophe may be most readily and effectually delayed, or altogether prevented? That she should be roused to the necessity of forming closer relations than at present exist, between her and the two nations which have the least desire of promoting their own interests at the expense of her disintegration. And what are these two nations? On the one hand the United States of America, on the other England.

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* See *Fortnightly Review*, October, 1889.

† *Asiatic Quarterly*, D. Boulger.

The Chairman (D. Howard, Esq., F.C.S., D.L., &c.)—I am sure all must have listened with much interest to this paper on the important subject of Chinese Ethics and Philosophy. Apparently it is an almost bottomless well of information and thought to those who study the subject.

I am glad to see some present who can speak on the subject. Perhaps Sir Thomas Wade will commence the discussion.

Sir Thomas F. Wade, G.C.M.G., K.C.B.*—I should like to congratulate first the meeting upon the paper to which we have just listened, and then ourselves upon the increase of attention which is now being aroused to the needs of that great country to which the paper refers.

The author has collected into an extremely compact essay an extraordinary amount of reading. It must have taken, I am sure, years to bring together all that he has set before us.

I should recommend that we should begin to rely upon mor modern compilers than Du Halde, remarkable authority as was this Jesuit father, to whom and to whose fellow workmen we really owe all that we once knew about China; for it is only during the last fifty years that we have got into contact with that shut-up country. I trust I shall not give offence if I endeavour in some instances to supplement what has fallen from the author; if I venture to move some amendments to some of his propositions. I should incline to say that instead of comprising the whole of Chinese philosophy under the five heads of the deities enumerated, we should rather commence with the five virtues to which those five sets of deities are intended to give effect. There is not, however, a direct relation in the numbers. The number five, has, for philosophic reasons, a very special attraction to the Chinese in this arrangement. They are, above all people, addicted to symmetrising their arrangements. For the work of creation they have five processes. Amongst the celestial bodies they have five planets. In the creation of the world they have five elements, and they have in the

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* The reporter's notes of this speech were twice carefully revised by Sir Thomas Wade, before his lamented decease.—Ed.

moral system five virtues, and between all these categories, moral and material, they discover a scientific relationship. The five virtues as a rule can, none of them, be translated by a single word. The first (in the order in which they usually state them) we are in the habit of Englishing by the word *humanity;* but it is a great deal more; it is philanthropy, benevolence, by which I mean disinterestedness, and in many cases it may be translated by *charity;* I mean Christian charity, not mere almsgiving. The second is that which may be translated by justice or principle, or very often by *public spirit.* The third, which we very commonly translate as *decorum* or *propriety*, is a far more comprehensive term, and should be translated by *obligations* and *observances:* it includes all ritualistic ceremonies, and all the courtesies that pass between one individual and another; but it may as correctly be described as a religious character. The fourth is *knowledge* or *experience:* it involves what Confucius was never tired of inculcating, viz.: studiousness. The fifth is *good faith:* good faith in sincerity of heart and good faith in practice.

It is worth noting that the word *sin* (good faith) has the double meaning which *fides* has in Latin—*i.e.*, it is the good faith which is one of our qualities, and it is belief, or the power of believing; indeed, the Chinese have no more common word for the word *belief* than that which we translate also as *good faith.*

I come next to the treatment of children by their parents. There is a certain severity, it is true, insisted upon on the part of the father; but it should be borne in mind, that in one of the earliest books put into a child's hand, he is taught that not to teach him is the fault of the father, but that to teach him without severity is simple laziness on the part of the teacher.

On page forty-six, in referring to the heterodox religions forbidden, the Roman Catholic form of Christianity, the Western doctrine, is mentioned as that "which exalts the Master of Heaven," and in parenthesis, the word *sky* is mentioned. In that particular combination, I should say *sky* had nothing to do with the question. I see below it is translated "Superior Heavens." The word *Heaven* when not used in a material sense is simply synonymous with our word *Providence.* The Chinese have no popular divinity

in the sense in which we understand the word, no single divinity to which the nation turns as the deity it worships. There is one Supreme Ruler, to whom the monarchs of old sacrificed, and to whom the present monarchs sacrifice. I suppose there is no worship on earth to which we can assign a continuous existence of 3,000 years, except this worship of the emperors, and some learned men go the length of believing, with Professor Legge of Oxford, that the *supreme ruler* of China is none other than the God of Revelation. I think it is very presumable that the divinity still sacrificed to by the Emperor of China did once represent the true God, early known, and long since lost; but I do not gather from Chinese literature that we have the right to say that the Supreme Ruler of China is beyond dispute the God of Revelation. Be this as it may, the individuality of this divinity was very early merged in an undefined godhood. In the Canon of History, an ancient work from which we learn what we know of the ancient constitution of what was not yet by a good deal the Chinese Empire, but merely a central state attaching to itself barbarous nations around and gradually civilizing them, I think we see clearly that the word Heaven began very early to be interchanged with the word Supreme Ruler. In fact, in regard to the obligations of men, high and low, you meet with the word *Heaven* very much more often than you do with the Chinese term *Shang Ti* (Supreme Ruler). But as regards the translation in the paper as *sky*, I do not think that is sustainable. The Roman Catholics had considerable difficulty in finding a term to render the word *God*, and they finally settled on *The Lord of Heaven*. Therefore we may be quite sure in that combination *The Lord of Heaven* was not intended to mean the sky that you see. There is, it is true, in Chinese philosophy, a great modern philosopher who has made Confucius his own, or has almost substituted himself for Confucius, and it is manifest in one passage of his writings that he is seeking to disentangle for himself the material from the immaterial. Still the ordinary Chinese when speaking, not of the sky but of the deity, use *Heaven* in the sense we use it in such phrases as "Heaven's will be done"; that is as immaterial. The Jesuits appear to have accepted that view, and allowed them to continue their homage

towards their deity. In their discussions with other missionaries they in fact contended that what the Chinese worshipped was the immaterial Heaven. The result was an angry controversy, and the difference between the Jesuits and their contemporaries on this point contributed mainly to the expulsion of both, and over two centuries ago.

There is in the paper a reference to the human frame which I think requires a little observation. The respect of the Chinese for the body and the distinctions that they draw in their punishments between punishment which mutilates the body and that which does not mutilate the body, is referable to considerations which we could not be prepared for. It is referable to the relation of the son to the father. The mutilation of the body, the loss of an arm, to say nothing of the loss of the head, is considered a reflection on the parents, in that it is a mutilation of the body bestowed upon the child by the parent. Therefore the criminality of a bad act, which involves death by mutilation of the person, is aggravated by the very fact that the body will have to be mutilated in the punishment of it.

And so we draw on to the question of ancestral worship and burial. I think one might say, before we come to ancestral worship, that the Chinese have regarded the practice of burial of the dead, from very early times, as a distinct mark of civilization. In the recorded utterances of the philosopher Mencius, the greatest of the representatives of the Confucian doctrine, who preached two generations after him, the fact that certain savage people had no knowledge of sepulture, is mentioned as strong evidence of their barbarism; and it being, in the minds of the Chinese, so sacred a rite, it is not to be wondered that the people who had put before them the duty of the child to the parent, should pay particular attention to the rite of sepulture and to the graves in which their forefathers are buried. I have never been able to regard the Worship of Ancestors as a rite to be summarily put down. I do not regard it as an idolatrous rite. The tombs are repaired twice a year; in the spring and autumn. A tablet, it is true, is exhibited with a number of characters on it; but there is no image and no image worship. There are offerings set

by the dead and incense burned, but I do not think the origin of that worship is to be explained otherwise than by the prescription which Confucius himself obeyed and inculcated, namely, that you shall serve the parent, dead, as though he were yet living; that is, you shall reverentially regard him; and I think that by our missionaries there should be very tender treatment indeed of the question of Ancestral Worship. If there is anything approaching an infraction of the 1st or 2nd Commandment in it (which I do not, myself, see that there is) we may be certain of this, that as the Chinese get nearer the God of Revelation they will put away such things as being unimportant. In our own case think of the number of occasions (and the usage has increased in the last generation), on which we repeat the obsequies of the dead when we have funeral commemoration services for them. For what purpose? Certainly not from a feeling of anything like idolatrous adoration of the departed, but in token of the continuance, it may be of the affection, or it may be of the respect we feel for them, or, is it not also, of the reliance on the Power into Whose hands the spirit has more immediately passed. I do not think it is worth while, therefore, for missionaries to attack, headlong, that question of Ancestral Worship. I think we must extend to it very much the same tolerance that St. Paul enjoined upon early Christians in the case of the Jews in respect of the ceremonies which they had been brought up to observe and which they were, for the time, unwilling to put away.

To pass to "Benevolent Institutions," although Confucianism inculcates benevolence, I think that in the *practice* of benevolence a vast deal is due to Buddhism. Buddhism inculcates philanthropy. We must be on our guard, however, against the assumption that the *practice* which we designate philanthropy, whether on the part of the government or of private persons, be wholly disinterested. You will frequently see in Peking, people who are not remarkably well-to-do, going about with cumbrous copper cash in their girdles to give to beggars, or to the helpless as they meet them. We must admit that their action does not all spring from the loftiest motives. They do believe that for their goodness and charity in this way they will be rewarded both here and hereafter,

that is, those who believe in a hereafter. Their charity is no little of it, a loan to fortune. And as regards the action of the government, I think there is a good deal of political motive in it. When the government comes to the rescue in famine, for instance, a strong motive, without doubt, is that without keeping the people quiet they are in danger of most serious consequences. It would not be fair, at the same time, to either Confucianism or Buddhism to affirm that neither the official nor the private citizen is at all moved by the teaching of these systems to be charitable.

I am afraid that, perhaps, I am encroaching on your time, but there is a great deal of ground to travel over.

To come to the laws of China, the codification of these is stated to have begun about B.C. 1100. Certainly the laws of the Chou Dynasty, which was founded about that date, are the oldest Chinese laws we possess; but we should never approach any part of Chinese ancient literature without remembering that the burning of the books two centuries before Christ by the decree of the despot who, having extinguished all his rival vassals, created himself the first emperor of all China, has put in doubt the authenticity of many of the extant texts. The dynasty of this man lasted so short a time, not more than twenty years, and the territory he had already assumed command of, was so extensive, that I should doubt that all the literature he intended to destroy had been destroyed. Still, he certainly went to work very ruthlessly, and to his command that all the books except two or three should be so disposed of, some effect was given. His dynasty was no sooner at an end than there was a reaction, and a number of books were, according to tradition, recovered. At all events within half a century of his disappearance, China had re-established her claim to possess a literature, and it is on that literature that her people have been fed ever since. Though it is manifest when parts of these ancient books are compared with each other that they cannot all be accepted as authentic, I see no reason to doubt that books very much such as those believed to have existed before and after the time of Confucius (B.C. 550–470), did exist, and that they were very much the same as those we have now. Thus the *Ritual of Chou* or some book of the sort was, I can have little doubt, the

foundation of the law that has prevailed in China ever since, from the burning of the books to the present time.

As regards the non-existence of a public ministry, a grand central department, in connection with state tribunals, there is this to be said, that in China every magisterial tribunal is competent to the administration of almost every law. The country is governed by a vast hierarchy or great bureaucratic system, the centre of which is of course Peking. Beyond the frontiers of China Proper we find what we may describe as military governments, of which we have not now time to say more. China Proper itself is divided into eighteen provinces. The higher officers of these we denominate Governors, Commissioners of Finance, of Justice, and Intendants of Circuits. Within the province are subdivisions, the larger of which we call departments, while the lesser subordinate to these are styled districts. This is roughly the provincial administration. The magistrate of the district is judge of first instance, as the French would call him. There are nearly 1,500 of these districts that the Empire is cut into, and every complaint, be it civil or criminal, before it can be tried elsewhere has first to go before this Magistrate, who is Coroner and Collector of Revenue, Registrar of Land Tenure, and, in short, the common centre of duties that, in western countries, we should suppose it would require ten or twenty departments to discharge. A petitioner must appear in that officer's court before he goes to the Prefect to complain, and that officer's decision, except in very minor cases, must be referred to the Prefect. Cases of certain gravity the Prefect sends up to the Criminal Commissioner, and eventually up to the Governor of the Province. Any very grave case is referred by the Governor of the Province to the different departments at Peking. You may say that the Empire is over-spread with a net-work of tribunals for the administration of the law, all of them dependent with more or less directness upon the Central Government.

I see it is stated that in some instances the audience, the persons assembled in court, are consulted. I confess I never heard of such a proceeding as that. It is the farthest thing from probable that a mandarin would do more than, perhaps, dramatically appeal to his audience; but the people are not

allowed any voice in the decision; for if the officer were wrong, he would stand in a very awkward position with his superiors, the high authorities of the province, whose place it is to review his decision, and if it be incorrect, to denounce him to the bureaus in the capital.

As to the division of punishments into two, *i.e.*, the death punishment being divided into decapitation and strangulation, they are again sub-divided; but decapitation or strangulation may take place after an appeal to the Emperor, which would give a prisoner a respite up to the following autumn assize, as it is called, or later. Then there is death by slow degrees, or flaying alive. That is a punishment commonly inflicted on rebels or for very grave offences, parricide for instance. I would here refer to the paucity of these punishments, which I think the Author remarked on towards the end of his paper. It is very true, on the whole, that punishments are not extraordinarily frequent, and indeed it is my impression though the Chinese, like civilized nations, commit every crime in the calendar, yet on the whole, if you consider how inferior their civilization is, how supine the government is, I believe there is not an extraordinary amount of crime in the country, as compared with what I have heard and read of in India. I have never done more than set my foot there, from time to time, but I should say that in India crime appears to me a great deal more frequent than in China. At the same time when dealing with such crimes as rebellion or piracy, the government is not sparing of severity. In the great T'ai P'ing rebellion, Canton was besieged by a certain section of these T'ai P'ing rebels for four months, and all the heads of the provincial government were beleaguered in the city without being able to stir out of it. The force at last broke up for want of funds. They had in their ranks very few of what we should call the responsible class in China, and certainly none, I should say, of the well-to-do people, but having broken up for want of funds, the government immediately reasserted itself. Rebels were brought in by the thousand to be dealt with in the city, and it was computed, and I fully believe it, that in the few months during which the Governor-General Yeh charged himself with the complete suppression of that rebellion, he beheaded 72,000 people.

The tortures which are alluded to in China and mentioned in our newspaper reports are sometimes such that we should hesitate to pronounce tortures; there is flogging and brutal usage, no doubt. But there are tortures administered by the law for the purpose of extracting confessions, to which we should give no other name; punishments the infliction of which we should not knowingly tolerate an hour in any country over which we exercise jurisdiction. There is, for instance, the use of a kind of boot, among other tortures, where three pieces of wood are brought to bear on the two feet and ankles. This is a punishment that was sanctioned by the third emperor of this dynasty, himself a very great lawyer, a public servant, who took immense pains with his work, but who was a cowardly man and with a very great tendency to severity. But even he, when these systems were submitted to him, observed, in his decree giving sanction to their adoption, that they should be resorted to with great caution, for though they might be useful in getting out the truth, yet if they were applied too harshly, there was no falsehood that might not be extorted by them.

I see that hundreds of millions are credited with the ability to read and write sufficiently for the ordinary purposes of life. I should flinch from giving quite so large an estimate as that, but the proportion of these millions is enormous. I should say, too, instead of reducing the occupations of life to two categories, viz.:—those connected with the mandarin class and those relating to trade, we should divide them into four, that being the Chinese partition. The Chinese divide the whole population into scholars, agriculturists, handicraftsmen, and merchants. Trade is put last and you must notice that agriculture is put second. Not only in ancient times did the Emperors plough in public and the Empresses weave silk, but to this time, once a year, the Emperor ploughs a limited piece of ground in the temple of the Spirit of Agriculture, while the Empress also spins or weaves, to show the respect of the dynasty for these ancient pursuits.

I think I must hasten to the end. There is a belief expressed in the Paper that "the gradual introduction of literature, which tends to explain the science and leading features of social life in

other countries, must of necessity affect the train of thought by which during some thousands of years past the ruling classes and the people in general have been educated." We must remember that this introduction of new ideas can only be regarded as only just beginning, in such a length of life as China has enjoyed. It was not before we became established at Peking in 1860 that, by the treaty which Lord Elgin signed in 1858, foreigners obtained access to the interior of the country, and up to a late date there was, and is indeed still, great opposition to the introduction of fresh knowledge at all. The passage that the Author read out to us would explain why there should be such an opposition. Boldly stated, the objection (putting aside the common dislike which many of us feel to changing our old ways), is in large part suggested by the precept of Confucius, that strange ways must be wrong. He particularly desires his followers to avoid new doctrines and new principles; to avoid fresh ways; and one subsidiary reason for the prescription that is given by him and by others up to this hour, is that not only may a new principle be directly wrong, but that new ways, particularly inventions, such as those that to our thinking have become so necessary to mankind in the present day, steamers and railways and such like, while they do violence to the theoretic simplicity approved by the ancient sages, promote also a desire for the accumulation of wealth, which according to the same teachers, must be harmful.

As to the last words of the Author, I heartily agree with him that the danger besetting the progress of China is immense. We should differ somewhat perhaps as to the means of protection at her disposal. She is in contact with more than the three powers mentioned—Russia, France, and England—all possibly dangerous by reason of their jealousies and conflicting interests. She is also in contact with Germany and the United States, and the Author suggests that the United States and England would be found her most valuable allies. If China does not move with greater rapidity (she is moving a little) she will certainly not prove equal *of herself* to face the consequences of any collision into which her disregard of treaty obligations to any treaty power may bring her. Meanwhile she is much too prone to disregard

her obligations to all. But in the event of such a collision as circumstances may bring upon her, we cannot invite her to rely on the active intervention either of the United States of America or ourselves; certainly, least of all of ourselves. Supposing that the Empire were involved to-morrow in a quarrel with France or Russia, or any other power in which we thought China was decidedly in the right, should we venture to say to any British subject or agent, whether in China or elsewhere, "You may go and help the Chinese if you like"? It is positively the last thing we should do. We have had officers in their land and sea services in times of peace, assisting them to construct men-of-war and to take other steps to enable them to preserve their independence, but in the event of a war we should at once have to withdraw such assistants; and the Chinese know that. With the United States I believe the difficulty would be almost as great. The Chinese would rather, I incline to believe, have English assistance than any other, but they must be aware by this time that they cannot always get it when it may be wanted. The power on which they might more reasonably rely is, in my opinion, Germany; because Germany would not be hampered at all by the same kind of restrictions that we should be; but, then again, Germany, at the very moment she was asked to assist, might have her own difficulty with China, going on as she is going on, and in that case support of her own interests might force upon Germany an unfriendly attitude. My one hope for China lies in a prolongation of peace until she shall have had something more, a good deal more, of the education that she needs, if she is to continue an independent state. I do not think that she will rapidly become aggressive; that is, I do not think this so probable as some people say it is. For years to come, at all events, she will be simply, with the aid of foreign intelligence, preparing herself to preserve her independence; the means to that end no doubt being the adoption of much that Confucius protested against centuries ago, the ultimate outcome of which, again, will be the substitution of some other moral and political system for that which we are wont to style Confucianist. The result of such a change it would be premature to predict.

The AUTHOR.—I desire, in the first place to express my gratification and thanks for your very kind reception of my paper.

If it had no other aim than to call forth the most valuable remarks of Sir Thomas Wade, I think more than the object I originally had in view would have been attained. His remarks are most valuable and of course I accept the comments that he has so kindly been pleased to make with regard to my paper. If I should live sufficiently long to have the honour of reading another before this Institute, I should endeavour to profit by those comments; but, in the meantime I would, with all deference, suggest whether we may not submit a request to Sir Thomas Wade to formally present at a meeting of this Institute, a continuation and expansion of the remarks he has made. (Applause.) I am sure it would be much valued from one possessing such an extensive knowledge of China, and having such experience, to say nothing of the exalted reputation he has always enjoyed in that country. Though I have not had the honour of his personal acquaintance, still, ever since I was associated with China myself, that is since the year 1860, I have heard his name constantly, and it has always been mentioned in terms of the very highest respect and admiration.

I will add no more than to repeat the hope I have already expressed.

The CHAIRMAN.—I am sure the wish that has been expressed by the author of the paper is one that will be echoed by all the Council. As to the worship of ancestors, I think there are those at home who should not say too much about the Chinese, for in some places the extensive floral and other ornamentation of graves, with different articles, that are put on them, seems to find its counterpart in what the Chinese do. May I ask you to join with me in thanking Dr. Gordon for his very valuable paper and also Sir Thomas Wade for his most valuable remarks.

Sir THOMAS WADE.—I should very much like to say that so far as what I might call the archaic divisions of the paper, to which we have listened with such gratification, are concerned, that any one who really desires to get views of "Confucianism," as it was and as it is, could not do better, in my opinion, than examine that not

very large work published by the Society for Promoting Christian Knowledge.

As regards the modern characteristics of the Chinese; really there is such an immense amount of detail that at once presents itself whenever one takes up the pen to write upon it, that I have always shrunk from the task.

Before sitting down I may say that you have done me the honour, more than once, of asking me to produce something on this topic; but I find myself so much better at promising than performing, that I will abstain, at any rate for the present, from making any promise on the subject.

The meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

The Ven. Archdeacon A. E. Moule, B.D., remarks:—

"The statements about 'Ancestral Worship' in China are I think open to criticism. The author is, I believe, right as to the original *sentiment* which gave birth to ancestor worship; but not right in implying, as he seems to imply, that modern observances coincide with ancient sentiment. Modern observances *do* I fear, involve *worship*. I have discussed this subject at some length in my recent book *New China and Old*, and have pleaded the desirability of substituting some Christian memorial rite for the Chinese church, which may preserve the sentiment and avoid superstitious observance.—I do not venture to offer a definite estimate of the number of readers and writers in China, but it is only a percentage of the male population."

Mr. T. A. Barber, M.A., Caius College, Cambridge, late of Wuchang High School, writes:—

Dr. Gordon's paper is a straightforward statement of facts and quotations, comment and explanation being, as a whole, excluded

by limits of space. Eight years in a purely Chinese city have given me some little knowledge of the matters brought forward. On one or two points it may be wise to utter a caution: the writer has ventured on the statement that almost every man can read and write sufficiently for the ordinary purposes of life; my experience is that the fact is far short of the statement. The ideographic nature of the written language must be remembered; half a dozen years of a boy's life are spent in mere unreasoning rote-work, in learning the particular sound attached to a particular character. Thus the great mass of the working class leave school at thirteen or fourteen, just before the "meaning" stage of education is reached, with the result that there are huge numbers who "know characters," but who can scarcely be said to read in our sense of an associated intelligence in reading. Even below this meagre standard of scholarship in the cities there are many who cannot read a character, and in most country districts of which I have knowledge, certainly at a generous estimate not more than half the working classes can read at all. Rough and ready proof of this is found in the fact that Christian converts, who are mostly drawn from the lower classes, constantly bear witness to the entrance of new ideas by "*learning to read*."

The subject of *Ancestral Worship* is so large and so difficult that it may be questioned whether it is worth while to write one paragraph in comment on one paragraph dealing with so vast a matter. Undoubtedly here is the *Arcanum* of the Chinese religious sentiment. Undoubtedly there is much to admire in this prime religious observance which tallies so well with the basal principle in Chinese ethics—filial piety. It is only fair to recognise the kinship to western care for the memorials of the dead; but it should not be forgotten that in practical life the outcome is the slavery of the living to the dead, and a childish perpetual haunting fear of ghosts. Dr. Gordon speaks of the offering of prayers at the graves; it should be clearly stated that while Buddhist and Taoist priests are often paid to chant masses for the repose of the departed, prayers *to* the dead are frequent. The belief is that the comfort of the dead depends on the amount spent by the living on paper money, houses, etc., which when burnt turn to the real article in Hades, and consequently that the spirits in Hades will return to plague and spoil the luck of those unable and unwilling to comply with these mercantile necessities.

Reverence, holy memory, affectionate dwelling on the precepts of the departed—these are the good side; but fear is practically the basis of morality rather than love, the bliss of the future life is reduced to a ledger account which perpetuates the inequalities of the present, and there is a strong tendency to the degradation of the practice of this fundamental morality down to a game of hide and seek with exacting and vengeful ghosts. The question suggested by the writer as to the effect upon nineteenth century international relations of the command in the sacred Edict "Cast out foreign sects," is a very practical one in China. That Edict is by law read publicly by high officials every month throughout the land.

Rev. R. C. Forsyth writes :—

With respect to Ancestral Worship; as a Christian missionary who has laboured in the interior of China for over eight years, I cannot agree that this ceremony is harmless.

Dr. Williams in his *Middle Kingdom*, vol. ii, page 239, says, "The fact that filial piety in this system has overpassed the limit set by God in His word and that deceased parents are worshipped as gods by their children, is both true and sad. That the worship rendered to their ancestors by the Chinese is idolatrous cannot be doubted; and it forms one of the subtlest phases of idolatry—essentially evil with the guise of goodness—ever established among men."

With this conclusion, I in common with the great majority of missionaries in China must reluctantly concur. In our mission—the English Baptist—working in Shantung, we have endeavoured to substitute for the idolatrous worship a Christian service of thanksgiving and praise with, however, not very marked results.

Laws and enactments.—In China, so far as I know it, the administration of the law is notoriously corrupt,* and in the district where our mission is working, robbery with violence and other forms of lawlessness are common, during the winter months especially.

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* The wise laws and edicts of generations gone by seem to exist, but not to be enforced.

Litigation is unfortunately very common and carried with surprising virulence to ruinous extremes; but justice is rare and the administration of it difficult where bribery is the rule and lying so universal.

As to "China in the future," there is no reasonable doubt that a great future is yet in store for China. Her thousands are spreading themselves all over the globe and no doubt millions will follow whenever the opportunity occurs. The Government of China is corrupt and the people are suffering in many ways from its laxity and inefficiency, but with the spread of Christianity which of later years has made remarkable progress, and with her sons in many lands receiving Christianity and witnessing its benefits, we may hope that China will at no distant date take her proper place at the head of Asia and at the feet of Christ.

TWENTY-SEVENTH ANNUAL MEETING.*

(HELD AT THE HOUSE OF THE SOCIETY OF ARTS.)

The President,

Sir GEORGE GABRIEL STOKES, Bart., LL.D., Sc.D., F.R.S.,

IN THE CHAIR.

Captain FRANCIS PETRIE, F.G.S., &c., Hon. Sec., read the following Report :—

Progress of the Institute.

In presenting the TWENTY-SEVENTH ANNUAL REPORT the Council is glad to be able to record the continued progress of the Institute. This progress, the Council has always felt, rested in no small degree with the Members and Associates themselves ; and this feeling has certainly become very general in the Institute, and has contributed to the firmness of that support which all have given, and which has tended not only to improve the Institute's strength and stability, but to increase public confidence in it. During the past year several Members and Associates have actively aided by proposing friends for election, also nearly a score of old Members, who had retired in the early years of the Institute, have rejoined.

2. Among the Institute's Members there has always been an increasing proportion who have taken their part in the investigation of Philosophical and Scientific questions, and of late years the Council has been much gratified to note that the number of others in the high walks of Science who have joined in forwarding the Institute's work (without actually becoming Members) is also largely on the increase. Such outside support has tended to enhance the value of its investigations in regard to Philosophical and Scientific questions generally, and especially in respect to theories which have been advanced in opposition to Religious belief. What has been accomplished has been of much value in the

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* Among those from whom communications were received expressing regret at not being able to be present were the Dukes of Argyll, Fife and Westminster, Lord Halsbury (Lord High Chancellor), Lord Kelvin, the President of the Royal Society, and others.

*** The issue of the proceedings on this occasion has been delayed.

interest of Religion as well as of Science; its tendency has been to bring about a truer appreciation of the results of Scientific inquiry, and those results have contributed to show that there is an absence of real opposition between Science and Religion.

3. Many leading home and foreign societies exchange Transactions with the Institute, and an increasing number of Universities, Colleges, Royal and Public Libraries in various countries subscribe (as Associates) for its Transactions.

4. It is satisfactory to note the continued work of the "American Institute of Christian Philosophy," an independent society, founded on the lines of the Victoria Institute, whose statement of objects was adopted by it. Its founders are still members of this Institute, and among the foremost to bear testimony to the value of our work.

5. The Library of Reference is in need of larger funds in order to maintain it in that efficient condition which is so necessary considering the important use made of it.

6. The following is the new list of the President and Council:—

President.

Sir George Gabriel Stokes, Bart., LL.D., Sc.D., F.R.S.

Vice-Presidents.

The Rt. Hon. Lord Halsbury, P.C., F.R.S.
Sir H. Barkly, G.C.M.G., K.C.B., F.R.S.
Sir Joseph Fayrer, K.C.S.I., F.R.S.
W. Forsyth, Esq., Q.C., LL.D.
The Hon. Alexander McArthur, D.L.
The Ven. Robinson Thornton, D.D., F.R.Hist.Soc., *Archdeacon of Middlesex.*
W. H. Hudleston, Esq., M.A., F.R.S., *President of the Geological Society.*

Trustees.

D. Howard, Esq., D.L., F.C.S.
Rev. Preb. H. Wace, D.D.
W. N. West, Esq., F.R.G.S., F.R.Hist.Soc.

Hon. Auditors.—J. Allen, Esq.; J. E. Wakefield, Esq.

Council.

Hon. Treas.—W. N. West, Esq., F.R.G.S., F.R.Hist.S.
Hon. Sec.—Capt. F. W. H. Petrie, F.G.S., &c.

*E. J. Morshead, Esq., H.M.C.S. (*For. Cor.*).
William Vanner, Esq., F.R.M.S.
S. D. Waddy, Esq., Q.C., M.P.
Rev. J. H. Rigg, D.D., *Pres. Wes. Conf.*
H. Cadman Jones, Esq., M.A.
Rev. W. Arthur.
Rev. J. Angus, M.A., D.D.
J. Bateman, Esq., F.R.S., F.L.S.
*D. Howard, Esq., D.L., F.C.S.
Professor H. A. Nicholson, M.D., F.R.S.E.
Bisset Hawkins, Esq., M.D., F.R.S.
The Bishop of Wakefield.
Rev. F. W. Tremlett, D.C.L.
Surg.-Gen. Gordon, M.D., C.B., Q.H.P.
His Excellency Dr. R. H. Gunning, F.R.S.E.
*Rev. Preb. H. Wace, D.D.
Rev. J. J. Lias, M.A.
*Gen. G. S. Hallowes. (*Cor. Sec.*)
Rev. A. I. McCaul, M.A.
Capt. Creak, R.N., F.R.S., &c.
Rev. F. A. Walker, D.D., F.L.S.
T. Chaplin, Esq., M.D.
Admiral H. D. Grant, C.B.
Rev. Canon Girdlestone, M.A.
Professor E. Hull, LL.D., F.R.S.
Lt.-Col. Freeman, M.A.
Sir. G. Buchanan, M.D., F.R.S.

* *Ex officio.*

7. The Council regret to announce the decease of the following supporters of the Institute:—

Rev. S. C. Adam, M.A. (*First Associate*); the Very Rev. Dean M. Argles, *A.*; Rev. W. R. Blackett, M.A., *A.*; Rev. G. Blencowe, *A.*; Rev. J. Boyle, *L.A.* (who translated and published in Brazil many of the Institute's papers and discussions); A. Briggs, Esq., *M.*; Captain E. K. Calver, R.N., F.R.S., *A.*; Vice-Chancellor G. W. Curtis, LL.D., Univ. N.Y., *M.*; Miss M. H. Cust, *A.*; E. H. Dering, Esq., *M.*; Rev. J. D. Dodgson, *A.*; Rev. C. Elliott, D.D., *M.*; Canon J. T. Fowler, M.B., *A.*; Rev. G. H. Fowler, *A.*; Rt. Rev. Bishop M. Thomas, D.D. (Goulburn), *A.*; W. Gribble, Esq., *A.*; Rt. Rev. Bishop J. Horden, D.D. (Moosonee), *A.*; Rev. C. R. Palmer, M.A., D.D., *A.*; Rev. S. Paynter, *L.M.*; W. Peek, Esq., *M.*; J. Shields, Esq., *F.M.*; C. W. Smith, Esq., *M.*; General Percy G. L. Smith, R.E., *A.*; H. C. Stuart, Esq., *A.*; J. S. Sutcliffe, Esq., *A.*; Norman Tate, Esq., *M.*; Rt. Hon. Lord Teynham, *M.*; Rev. W. Woolls, Ph.D., F.L.S., F.R.S. (N.S.W), *A.*

F. Foundation. *L.* Life. *M.* Member. *A.* Associate.

8. The following is a statement of the changes which have occurred:—

	Life		Annual	
	Members.	Associates.	Members.	Associates.
Numbers on June 20, 1892	63	44	370	835
Deduct Deaths	1	....	10	18
„ Retirements	....	....	4	20
			— 15	— 38
			355	797
Changes		....	−3	3
			352	800
Joined to June 20, 1893.... ...		....	10	53
	62	44	362	853
	106		1215	
Total			1321	
Hon. Correspondents number 136.		Total		1457.

Finance.

9. The Treasurer's Balance-sheet for the year ending December 31, 1891, duly audited, shows a balance credit of £92 10*s.* 8*d.*, after the payment of all liabilities, with the exception of a bill due to the printer. The amount invested in 2¾ per cent. Consols is £1,365 18*s.* 9*d.*

The Council desires to urge the great advantage it would be were Members to remit their Subscriptions during the first half of the year, as a large proportion already do. Were this the rule with all, the whole machinery of the Institute

would work with an ease that would greatly add to its success. Forms for the payment of the Subscriptions through a banker are used by a large number, and may always be had at the office.

The arrears of subscriptions are as follow :—

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Members	1	2	2	0	1	3	0	6	10
Associates	0	1	2	2	10	15	6	5	15
	1	3	4	2	11	18	6	11	25

MEETINGS.

Monday, December 5, 1892.—"Principles of Rank among Animals" (with special reference to Man.) By Professor Henry Webster Parker, U.S. With discussion.

Monday, January 2, 1893.—"Evolution and Design." By G. Cox-Bompas Esq., F.G.S., F.R.G.S. "Archæology and Evolution." By R. Huyshe Walkey, Esq. With discussion.

Monday, January 16.—"How the Water of the Ocean became Salt." By Professor Edward Hull, LL.D., F.R.S., F.G.S., &c. Remarks by Professor Tyndall and others.

Monday, February 6.—On "Primitive Man" (Neolithic Age). By Rev. J. Magens Mello, M.A., F.G.S. With special communications from Sir J. W. Dawson, F.R.S., and others.

Monday, February 20.—"Life, as compared with the Physical Forces." By J. W. Slater, Esq., F.C.S., F.E.S., &c. With special communications from the President (Sir G. G. Stokes, Bart., F.R.S.); Dr. Rae, F.R.S.; Professor Lionel S. Beale, F.R.S.; Professor Bernard and others.

Monday, March 6.—"The Scepticism of Kant." By W. L. Courtney, Esq., LL.D. With special communications from Professor Duns and others.

Monday, March 20.—"Buddha, and the Light of Asia." By Rev. R. Collins, M.A. With numerous communications from Professor Legge, of Oxford; the Rev. Dr. G. U. Pope; Major Conder, R.E., D.C.L.; Mr. R. Scott Moncrieff; Rev. Dr. Kenneth Macdonald; the Rev. Professor Simon and others.

Monday, April 10.—"Primitive Indian Philosophy and some Modern Parallels." By W. H. Robinson, Esq. *A lecture.*

Monday, April 17.—On "The Comparison of Asiatic Languages." By Major C. R. Conder, R.E., D.C.L., LL.D., &c. With communications from Professor Legge, of Oxford; Count de Hulst; Mr. T. G. Pinches of British Museum; Dr. Koelle and others.

Monday, May 1.—On "The List of Sheshonq at Karnac." By M. Maspero. Several Egyptian explorers took part in the discussion on this paper.

Monday, May 15.—"Notes on a Visit to Tel el Amarna." By Mr. W. St. C. Boscawen. *A lecture.*

Thursday, June 29.—*Annual Meeting held at the House of the Society of Arts.*—Address by the President, on the "Luminiferous Ether," Sir G. G. Stokes, Bart., LL.D., Sc.D., F.R.S.

10. The Session has been fully equal to the remarkably successful one of 1892, and the improvements carried out by the Council have been fully approved.

11. *Publications.*

The twenty-sixth volume of the Transactions is now about to be published, at an earlier date than last year. It contains investigations in regard to several important subjects, such as the further traces of the route of the Exodus; some results of Babylonian research; an examination of the arguments in regard to the theory of Natural Selection; an inquiry into the "mortality caused by snake bite." (In regard to this, the Institute's system of sending proof copies of papers to be read to all members desiring the same, in whatever country they might be, has resulted in a most important outcome of the Institute's discussion of this question; and there is now a well-founded hope that what has been not only a scourge but also a serious hindrance to the spread of civilising influences in the East, will, ere long, no more exist); an investigation, initiated by Dr. Hill, throwing new light on the value of the arguments for human responsibility; and a fresh investigation of the philosophical basis of the Argument from Design: such are some of the many subjects that enrich this volume.

From time to time the Members of the Institute have expressed a high sense of the value of the Transactions of the Institute, inasmuch as they *did not contain the opinion of one person only on each subject considered but the opinions of many competent authorities* in various parts of the world. That a system like this carried on by a competent body or Society gives a value to the treatment of the several subjects beyond that which any individual author could give, is evident.

12. *Translations.**

For many years, translations from the Journal have been made by Members, resident abroad, into various languages, and have been published by them, some in pamphlet form, others in various local serials; such translations have already appeared in several instances in the dialects of India; in French; Italian; Spanish; Portuguese, and other languages,

* A collection of these is now being made.

—in arranging as to the last named, the late Emperor of Brazil (who was a member and possessed a complete set of the Institute's Transactions) was one who took a special interest. In regard to the value of such translations in China, the Archdeacon of Mid-China—who has been an earnest supporter of the Institute for twenty-seven years—after describing the changes coming over China at the present time, and the thirst there for modern books on scientific and other subjects, says:—"What better books can we place in the hands of these eager Chinese than the Transactions or extracts from the Transactions of our Institute? I have great hopes in this direction. I shall certainly suggest that some of the most valuable works to be translated into that language would be the Victoria Institute Papers. I thank God for this Institute; may it live long and prosper."*

13. *Lectures.*

Members, at home and abroad, use the papers in the Journal as lectures, or as the basis of such, and amongst the extensive correspondence received are applications for information of all kinds in regard to subjects upon which members find it desirable to arrange for local lectures.

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* On Some Uses made of the Institute by its Members.—Many Members have found that their connexion with the Institute has proved more than a mere personal advantage to themselves; as they have realised that the Institute met a need felt both at home and abroad, especially in our Colonies and India, where the want of the true appreciation of the actual results of scientific enquiry has led many, especially the less informed, to credit such statements as that "Science and Philosophy were alike opposed to Revelation," and that "the progress of Science has given a death-blow to all belief in the truth of the Bible." (As one result of this the Bible is a forbidden Book in more than one Board School at home and in our Colonies.) Numerous Members have sought to make use of the Institute's investigations to dispel such erroneous ideas as those referred to, by using the papers in the Journal—I. as lectures, or to lecture from in their respective localities, and have often corresponded with the Institute as to the preparation of such lectures; II. by translating papers and publishing such translations (this in many countries); III. by using their influence in their respective localities to secure that local libraries and institutions should subscribe for the Journal, thus bringing its pages before a still wider circle of readers; IV. by interesting others in its proceedings,—and in many other ways. The Council trust the foregoing plans may be even more generally adopted by Members.

14. *The Special Fund.*

This fund was founded with a view to still further advancing the influence of the Institute. I. By the publication of the twelve papers in the People's Edition.* II. By enabling grants of papers or volumes of the Transactions to be made at home or abroad, when specially needed. (Many applications have been refused of late, as the fund has not been sufficient.) III. To enlarge the library of reference.

Conclusion.

The Institute, for years so carefully built up by wise counsels, and found so useful in the defence of the Truth,—especially in cases where the great truths revealed in Holy Scripture have been involved—claims the heartiest support. The formation of a Society of Christian Philosophers, whose voluntary labours are often supplemented by those of others not yet in its ranks, is not the work of a day and it is one which should not want for the loyalty of a single member. It merits cordial co-operation from all, and the more each one, remembering the high objects in view, contributes in some way, either by taking part in the work of the Institute or by increasing the number of its adherents, the greater will be the value of the results attained; all being—in the words of its motto, *Ad Majorem Dei Gloriam.*

Signed on behalf of the Council,

G. G. Stokes, *President.*

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* This Edition consists of twelve papers—written in a style to be comprehended by all—reprinted from the Journal of Transactions. The Edition was started by some members in the year 1873, and first drew public attention to the importance of works of the kind. The Institute's pamphlets contain the objections and criticisms usually urged in discussing the subjects, as so many home and foreign correspondents have urged the value of including these. They are published in neat covers, and are sold at a nominal price (sixpence) by the Institute's organization of bookseller agents at home and abroad, and single copies are supplied *gratuitously*, or at cost price, to all individual lecturers against infidelity, including those of the London City Mission, the Christian Evidence Society, and similar bodies.

ANNUAL BALANCE SHEET, *from 1st January to 31st December*, 1892.

RECEIPTS.	£	s.	d.	£	s.	d.
Balance from 1891				*233	10	5
Subscriptions :—						
1 Life Member	21	0	0			
3 Life Associates	31	10	0			
				52	10	0
1 Member, 1887	2	2	0			
2 „ 1888	4	4	0			
1 „ 1889	2	2	0			
7 „ 1891	14	14	0			
192 „ 1892	403	4	0			
5 „ 1893	10	10	0			
7 Entrance Fees	7	7	0			
1 Associate, 1887	1	1	0			
1 „ 1888	1	1	0			
9 „ 1889	9	9	0			
12 „ 1890	12	12	0			
37 „ 1891	38	17	0			
491 „ 1892	515	11	0			
26 „ 1893	27	6	0			
2 „ 1894	2	2	0			
				1,052	2	0
Div. on £1,365 18*s.* 9*d.* 2¾ p.c. Consols (5 qrs.) ..				45	15	5
Donations to Special Fund				1	11	0
Sale of Journals, &c.				59	6	2
				£1,444	15	0

EXPENDITURE.	£	s.	d.
Printing	368	7	4
Postage	130	10	6
Binding	30	4	8
Reporting	29	8	0
Typewriting	5	18	4
Stationery and Lithography	50	4	2
Advertising	32	2	9
Expenses of Meetings	18	11	6
Travelling	14	13	1
Salaries for Year	91	5	10
Rent	180	0	0
Housekeeper	2	18	4
Electric Light, Installation	15	1	4
Coal and Light	12	15	3
Library and Furniture	41	16	6
Law Expenses	5	0	0
Organization	315	0	0
Insurance..	0	12	0
Sundries	5	12	11
Subscription paid in error	1	1	0
Bank Charges	1	0	10
Balance, Cr.	92	10	8
	£1,444	15	0

We have examined the Balance Sheet with the Books and Vouchers, and find a Balance in hand of £92 10*s.* 8*d.*

JOHN ALLEN
JOHN E. WAKEFIELD } *Auditors.*

* Less £173 for 1891 Printer's bill which was received after the close of the year.

W. N. WEST, *Hon. Treas.*

Sir Joseph Fayrer, K.C.S.I., F.R.S.—I beg to move "That the Report be received, and the thanks of the Members and Associates presented to the Council, Honorary Officers and Auditors, for their efficient conduct of the business of the Victoria Institute during the year." I am sure the Report must be very gratifying to all, presuming, as I do, that you take an interest in the welfare of the Victoria Institute. It gives a most satisfactory account of the progress made, and shows that the Members are increasing in number, that the financial aspects are assuring, and that the papers have been of such a character as to elicit the approbation of those who are best qualified to form a true estimate of their value The work of this Institute seems to be gradually spreading and diffusing itself over the whole world. The papers read are widely circulated and translated by various foreign members, and apparently they are much appreciated. Scarcely any part of the civilised world seems to be deprived of them. The purposes and objects of this Institute, as I think all of you know, are such as ought to commend themselves to all reasonable people. The object is the investigation and the pursuit of truth. The Members of this Institute while having a firm conviction of the great truths contained in Holy Writ, have at the same time an equally firm conviction that scientific investigation is not, and cannot, in any sense, be antagonistic to that which is the real Truth. It gives us great satisfaction to know that the President of this Institute is one of the foremost men of science at the present time; and also to know that the President of the Geological Society is a Member and a Vice-President of the Council of this Institute. (Applause.) The object of the Institute is simply the investigation of truth, and it is almost needless to repeat to you that there is but one truth. I should like to dwell for some time upon a subject of this kind because it is one that interests me much, but there is not time for me to do so. With reference to the second part of the resolution returning the thanks of the Members and Associates to the Council, Honorary Officers and Auditors for their efficient conduct of the business of the Victoria Institute during the year, I should like to be permitted, in connection with the names of all these gentlemen, to specially mention one name which I am sure will be an acceptable one, Captain Petrie, our Honorary Secretary. (Applause.) In all the many matters coming before the Council for their consideration

that body has felt that to his patience, discretion, wise judgment, energy and power of work the Institute owes much of its success. I will not detain you longer, as you are no doubt anxious to listen to the interesting Address of our President.

A. McArthur, Esq., D.L., V.P.—The Report we have listened to is a highly satisfactory one. Notwithstanding the number of members we have unfortunately lost by death during the past year, and the universal financial depression, the numbers have not only been maintained but increased. I wish also to endorse what has been said with reference to the officers of the Institute. I have had the honour of being one of those who originally founded the Institute, and I can well recollect some twenty-two years ago, when we lost our first Hon. Sec., Mr. Reddie—who took so deep and lively an interest in the Institute, and did so much for it at its foundation—we very much feared for the Institute's future; but his successor has enabled the Council to raise it to its present position. I remember on one occasion saying that I hoped to live to see our membership reach 1,000. It is now nearly 50 per cent. above that number, and is well known all over the world and highly appreciated.

The resolution was put and carried unanimously.

Professor E. Hull, LL.D., F.R.S.—As one of the Council I am sure I may say that we feel exceedingly grateful for the kind manner in which you have received this resolution. The Council has never had very much labour in carrying on the work of the Society owing to the admirable and systematic manner in which the accounts and general business of the Institute are conducted under its auspices. The greatest reward that the Council and other officers could have, is the knowledge that the publications of this Institute are appreciated both at home and abroad and are doing good work throughout the world.

The President then delivered the following "Address":—

THE LUMINIFEROUS ETHER.

I MUST in the first instance express my regret that we are disappointed with respect to an important paper which was to have been brought before you at our Anniversary Meeting. It was found almost at the last moment that the Author would be unable to bring it on, and at the request of the Council I have undertaken at short notice, and in the midst of various other engagements, to address you to-night.

In choosing a subject, I have been guided in part by the opinion I entertain of the proper functions of the Victoria Institute. It is not, I conceive, a society established for the prosecution of original research simply as such; the field in that respect was already occupied; in the first instance by the oldest scientific society in the kingdom, almost in the world—the Royal Society; and more recently by other societies which have sprung into existence for the special cultivation of divisions into which the general subject of science has been split, in consequence of the great extent which it has attained. A young Institute, like the present, cannot expect to rival these ancient or more recently established special scientific societies; nor is it desirable, in my opinion, that such an attempt should be made. I do not, therefore, regard it in the slightest degree as a rival to the Royal Society; and it was only because I was strongly impressed with the entire difference of the functions of the two Societies, that I felt it not incompatible with my position at the time as President of the Royal Society to accept the position which had been offered me of the Presidency of the Victoria Institute. The Society, as is proved by its original rules, was established more especially to examine from the scientific side

into any apparent conflict between what was supposed by some to be the legitimate conclusions of Science, and what was believed by others to be revealed. The two questions, therefore, of what is established by Science and what has been revealed to man come more or less into the functions of this Institute; but it is not a Society intended primarily for the production of original discoveries in Science—although an account of such, if it were offered, would not for that reason be rejected, still less is it intended to be a Society for the discussion of purely theological questions. Those who believe that a revelation has been made from God to man, and who believe also that the system of Nature and the laws which govern it are His work, must accept as an axiom that there can be no real antagonism between the two; that accordingly any apparent antagonism must be due to a mistake, either on the one side or on the other. It is with a view of investigating, as far as may be, the origin of such mistakes, and accordingly removing that appearance—for it can only be an appearance—of antagonism between the two, that this Institute was mainly founded. In order that it should be able to fulfil these offices, it is essential that those who endeavour to remove the apparent discrepancies to which I have alluded should come to the investigation with open mind, free from prejudice, desiring only to learn the truth according as it may appear on an impartial review of the whole of the evidence. Those who approach the investigation rather from the side of Science must not assume that everything in Nature is capable of explanation by purely scientific methods; nor must those who come to the investigation rather from the theological side consider that they are infallible in the interpretation which they are disposed to place upon what they believe to be revealed. Nor, again must these latter forget that as regards the real evidence bearing upon the question obtainable from the study of science they themselves may not always be the best judges, because as a rule perhaps they would not have made a very special study of the scientific questions which they imagine to come into conflict with what, on entirely different grounds, they believe to be the truth. There must be mutual toleration between those who approach the subject from the scientific, and those who approach it rather from the theological side, each being ready to modify, if sufficient reason be shewn, his preconceived opinions in the simple pursuit of truth.

The utility of the Institute depends, in my opinion, on the loyalty with which this principle is carried out. If it be true that there is occasionally a tendency on the part of the votaries of Science to regard scientific methods as the sole means of arriving at truth, and to disregard what claims to be the truth on the ground that that claim depends in good measure on the exercise of the feelings and moral faculties, it is, I think, no less true that there is occasionally a tendency on the part of those whose chief attention has been devoted to investigations of the latter class to attribute to their own apprehension of their subject that infallibility which they conceive to belong to the subject in itself; to summarily reject what claims to be supported by weighty scientific evidence, of the force of which they themselves may be ill able to judge, merely because it runs counter to the ideas which they had been led to adopt on evidence of quite a different nature.

But truth cannot be self-contradictory; and if there be conflict between conclusions obtained by methods of quite a different nature, and each supposed by those who respectively employ them to be sound, the fair thing evidently is to compare, if possible, the two modes of deduction, so as to trace the discrepancy in the conclusions to its origin, which must necessarily be some unwarranted assumption, or false step of reasoning, or, in the numerous cases in which the reasoning is not demonstrative, but a balance of probability has to be struck, in an exaggerated estimate of the probable evidence in favour of one conclusion, and a depreciation of that in favour of the opposite.

But here a difficulty arises. It may very well happen that a person who draws his conclusion in one way, by a method similar to those which he is in the habit of employing in other cases, may be ill qualified to judge of the evidence on the strength of which another person draws a different conclusion. In such cases the process which appears most conducive to attainment of the truth appears to be to compare notes in a friendly discussion, with the asistance, if it may be, of other persons who have studied the subject, and of whom some, perhaps, are more used to the employment of the one, some to that of the other, of the methods alluded to. Each party may thus learn something from the other, and thereby be enabled to form a sounder judgment on the whole of the evidence.

Opportunities for discussions of this kind are afforded by

our meetings; and through the publication of our Journal, containing the papers read before us, with an abstract of the discussions to which they gave rise, a far wider circle is reached than that of merely those who are assembled at the meeting.

I have said that I did not regard the Institute as primarily a Society for scientific research, and yet our objects bring us closely into connection with research of that kind. In what way can purely scientific questions be most properly brought before the Institute, considering the object for which it was established? For my own part I think that one of the most useful things that can be done by those who bring forward scientific matters is to present a general view of our scientific knowledge on those subjects to which they themselves have more particularly attended, or to expound the conclusions to which some special research of their own may have conducted them, when those conclusions may seem to have some bearing, even though it be remote, on the other branch of our subject. In pursuance of this idea, I intend to bring before you to-night a subject which the study of light has caused me to think a good deal about: I refer to the nature and properties of the so-called luminiferous ether.

This subject is, in one respect, specially fascinating, scientifically considered. It lies, we may say, in an especial manner on the border land between what is known and what is unknown. In the study of it it is quite conceivable that great discoveries may be made, and, in fact, great discoveries have already been made, and I may say even quite recently, and we do not at present know how much additional light on the system of Nature may be in store for the men of Science; possibly even in the near future, possibly not until many generations have passed away. I will assume, as what is familiarly known to you all, and what is well established by methods into which I will not enter, that the heavenly bodies are at an immense distance from our earth. More especially is this the case with the fixed stars. Their distance is so enormous that even when we take as a base line, so to speak, the diameter of the earth's orbit, which we know to be about 184 millions of miles, the apparent displacement of the stars due to parallax is so minute as almost to elude our investigation. Nevertheless that distance is more or less accurately determined in the case of a few of the fixed stars. But the vast majority, as we have every reason to believe, are at such an enormous distance that even this method fails with them.

To give a conception of the immense distance of the fixed stars, I will assume as known that light travels at the rate of about 186,000 miles in one second, a rate which would carry it nearly eight times round and round the earth in that time; and yet if we take the star which, so far as we know, is our nearest neighbour, it would take three or four years for light from that star to reach the earth. Now as we see the fixed stars there must be some link of connection between us and them in order that we should be able to perceive them. Probably all of you know that two theories have been put forward as to the nature of light, as to the nature accordingly of that connection of which I have spoken. According to one idea, light is a substance darted forth from the luminous body with an amazing velocity; according to the other, it consists in a change of state taking place, propagated through a medium, as it is called, intervening between the body from which the light proceeds and the eye of the observer. For a considerable time the first of these theories was that chiefly adopted by scientific men. It was that, as you know, which Newton himself adopted; and probably the prestige of his name had much to do with the favourable reception which for a long time it received. But more recent researches have so completely established the truth of the other view, and refuted the old doctrine of emissions, that it is now universally held by scientific men that light consists in an undulatory movement propagated in a medium existing in all the space through which light is capable of passing.

This necessity for filling all space, or at least, such an inconceivably great extent of space, with a medium, the office of which, so far as was known in the first instance, was simply that of propagating light, was an obstacle for a time to the reception by the minds of some of the theory of undulations. Men had been in the habit of regarding the inter-planetary and inter-stellar space as a vacuum, and it seemed too great an assumption to fill all this supposed vacuous space with some kind of medium for the sole purpose of transmitting light. Notwithstanding, even long ago strong opinions were entertained to the effect that there must be something intervening between the different heavenly bodies. In a letter to Bentley, Newton expresses himself in very strong language to this effect: "That gravity should be innate, inherent and essential to matter, so that one body may act upon another at a distance through a *vacuum*, without the mediation of anything else,

by and through which their action and force may be conveyed from one to another, is to me so great an absurdity, that I believe that no man who has in philosophical matters a competent faculty of thinking, can ever fall into it. Gravity must be caused by an agent acting constantly according to certain fixed laws: but whether this agent be material or immaterial, I have left to the consideration of my readers."

What the nature of the connection between the earth and the sun, for example, may be whereby the sun is able to attract the earth and thereby keep it in its orbit, in other words, what the cause of gravitation may be, we do not know; for anything we know to the contrary, it may be connected with this intermediate medium or luminiferous ether. There are other offices, we believe, which this luminiferous ether fulfils, to which I shall have occasion to allude presently.

In connection with the necessity for filling such vast regions of space with this medium, a curious question naturally presents itself. We cannot conceive of space as other than infinite, but we habitually think of matter as occupying here or there limited portions of space, as for example the different heavenly bodies. The intervening space we commonly think of as a vacuum, and it is only the phenomena of light that led us in the first instance to think of it as filled with some kind of material. The question naturally presents itself to the mind, is this ether absolutely infinite like space? This is a question to which Science can give no answer. Though we cannot help thinking of space as infinite, yet when we turn our thoughts to some material existing in space perhaps we more readily think of it as finite than infinite. But if the ether, however vast the portion of space over which it extends, be really limited, we can hardly fail to speculate what there may be outside its limits. Space there might be wholly vacuous, or possibly outside altogether this vast system of stars and ether there may be another system subject to the same laws, or subject to different laws, as the case may be, equally vast in extent: and if there be, then so far as we can gather from such phenomena as are open to our investigation, there can be no communication between that vast portion of space in part of which we live and an ideal system altogether outside the ether of which we have been speaking.

But the properties of the ether are no less remarkable

than its vast or even possibly limitless extent. Matter of which our senses give us any cognizance is heavy, that is to say, it gravitates towards other matter which agrees with it in so far as being accessible to our senses. The question presents itself to the mind, does the ether gravitate towards what we call ponderable matter? This is a question to which we are not able to give any positive scientific answer. If the ether be in some way or other connected with the cause of gravitation, it would seem more likely that it itself does not gravitate towards ponderable matter.

Again, we have very strong reason for believing that ponderable matter consists of ultimate molecules. First, that supposition accords in the simplest way with the laws of crystallography. Chemical laws afford still stronger confirmation of the hypothesis, through the atomic theory of Dalton, now universally accepted. Comparatively recently, the deduction of the fundamental property of gases from the kinetic theory, as it is called, affords strong additional confirmation of that view of the constitution of matter. Still more recently, the explanation which has been afforded by that theory of that most remarkable instrument the radiometer of Crookes has lent further confirmation in the same direction. None of these evidences apply to the ether, and accordingly we are left in doubt whether it too consists of ultimate molecules, or whether on the other hand it is continuous, as we cannot help conceiving space to be.

The undulatory theory of light was greatly promoted in the first instance by the known phenomena of sound, and the explanation which they received from the hydrodynamical theory. Accordingly, since sound, as we know, consists of an undulatory movement propagated through the air (or it may be through other media), and depending upon condensation and rarefaction, it was supposed naturally that light was propagated in a similar manner, by virtue of the forces brought into play by the condensation and rarefaction of the ether. But there is one whole class of phenomena which have actually no counterpart in those of sound; I refer to polarization and double refraction.

The evidence for the truth of the theory of undulations as regards the phenomena of common light depends in great measure upon the fact of interference and the explanation which the theory gives of the complicated phenomena of diffraction. But in studying the interference of polarized light, additional phenomena presented themselves which

ultimately pointed out that the vibrations with which we are concerned in the case of the ether differ altogether in their character from those which belong to sound. The phenomena of the interference of polarized light prove incontestably that there exists in light an element of some kind having relation to directions transverse to that of propagation, and admitting of composition and resolution in a plane perpendicular to the direction of transmission according to the very same laws as those of the composition and resolution of forces, or velocities, or displacements in such a plane. This requires us to attribute to the ether a constitution altogether different from that of air. It points out the existence of a sort of elasticity whereby the ether tends to check the gliding of one layer over another. Have we no example of such a force in the case of ponderable matter? We have. We know that an elastic solid, which for simplicity I will suppose to be uncrystalline, and alike in all directions, has two kinds of elasticity, by one of which it, like air, tends to resist compression and rarefaction, while by the other it tends to resist a continuous gliding of one portion over another, and to restore itself to its primitive state if such a gliding has taken place. There is no direct relation between the magnitude of these two kinds of elasticity, and in the case of an elastic solid such as jelly the resistance to compression is enormously great compared to the resistance to a gliding displacement.

If we assume that in the ether there is really an elasticity tending to restore it to its primitive condition when one layer tends to glide over another, an elasticity which it appears to be absolutely necessary to admit in order to account for the observed laws of interference of polarized light, the question arises, Can we thereby explain double refraction?

The earliest attempts to explain it in accordance with the theory of transverse vibrations were made by attributing to the ether a molecular constitution more or less analogous to that which we believe to exist in ponderable matter. Following out speculations founded upon that view, the celebrated Fresnel was led to the discovery of the actual laws of double refraction; the theory, however, which he gave was by no means complete, inasmuch as the results were not rigorously deduced from the premises. Cauchy and Neumann, independently and about simultaneously, took up Fresnel's view of the constitution of the ether and

applied it to explain the laws of double refraction. In their theory the conclusions arrived at were rigorously derived from the premises; but the results did not altogether agree with observation; that is to say, although they could by the adoption of certain suppositions be forced into a near accordance with the observed laws of double refraction, yet they pointed out the necessity of the existence of other phenomena which were belied by observation. Our own countryman Green was the first to deduce Fresnel's laws from a rigorous dynamical theory, although nearly simultaneously MacCullagh arrived at a theory in some respects similar, though on the whole I think less satisfactory.

Still all these theories followed pretty closely the analogy of ponderable matter; and at least in the first three mentioned the ether was even imagined to consist of discrete molecules, acting on one another, like the bodies of the solar system regarded as points, by forces in the direction of the joining line, and varying as some function of the distance. I have already quoted the very strong language in which Newton rejected the idea of the heavenly bodies acting on one another across intervening spaces which were absolutely void. But the conception has nothing to do with the magnitude of the intervening spaces; and the conception of action at a distance across an intervening space which is absolutely void, is not a bit easier when the space in question is merely that separating two adjacent molecules, when the ether is thought of as consisting of discrete molecules, than it is when the space is that separating two bodies of the solar system, though in this latter case it may amount to many millions of miles. If the ether be in some unknown manner the link of connection whereby two heavenly bodies are enabled to exert on one another the attraction of gravitation, then according to the hypothetical constitution of the ether that we have been considering, we seem compelled to invent an ether of the second order, so to speak, to form a link of connection between two separate molecules of the luminiferous ether. But since the nature of the ether is so very different as it must be from that of ponderable matter, it may be that the true theory must proceed upon lines in which our previous conceptions derived from the study of ponderable matter are in great measure departed from.

If we think of the ether as a sort of gigantic jelly, we can hardly imagine but that it would more or less resist the

passage of the heavenly bodies—the planets for instance—through it. Yet there appears to be no certain indication of any such resistance. It has been observed indeed in the case of Encke's comet, that at successive revolutions the comet returned to its perihelion a little before the calculated time. This would be accounted for by the supposition that it experienced a certain amount of resistance from the ether. Although at first sight we might be disposed to say that such a resistance would retard perihelion passage, yet the fact that it would accelerate it becomes easily intelligible, if we consider that the resistance experienced would tend to check its motion, and so prevent it from getting away so far from the sun at aphelion, and would consequently bring it more nearly into the condition of a planet circulating round the sun in a smaller orbit.

Many years ago I asked the highest authority in this country on Physical Astronomy, the late Professor Adams, what he thought of the evidence afforded by Encke's comet for the existence of a retarding force, such as might arise from the ether. He said to me that he thought we did not know enough as to whether there might not possibly be a planet or planets within the orbit of Mercury which would account for it in a different way. But quite independently of such a supposition it is worthy of note that the remarkable phenomena presented by the tails of comets render it by no means unlikely that even without the presence of a resisting medium, and without the disturbing force arising from the attraction of an unknown planet situated so near to the sun as not to have been seen hitherto, the motion of the head of a comet might not be quite the same as that of a simple body representing the nucleus, and being subject to the gravitation of the sun and planets and nothing else. It appears that the tails consist of some kind of matter driven from the comet with an enormous velocity by a sort of repulsion emanating from the sun. If the nucleus loses in this manner at each perihelion passage an exceedingly small portion of its mass, which is repelled from the sun, it is possible that the residue may experience an attraction towards the sun over and above that due to gravitation, and that possibly this may be the cause of the observed acceleration in the time of passing perihelion even though there be no resistance on the part of the ether. So that the question of resistance or no resistance must be left an open one.

The supposition that the ether would resist in this manner

a body moving through it is derived from what we observe in the case of solids moving through fluids, liquid or gaseous, as the case may be. In ordinary cases of resistance, the main representative of the work apparently lost in propelling the solid is in the first instance the molar kinetic energy of the trail of eddies in the wake. The formation of these eddies is, however, an indirect effect of the internal friction, or if we prefer the term viscosity, of the fluid. Now the viscosity of gases has been explained on the kinetic theory of gases, and in the case of a liquid we cannot well doubt that it is connected with the constitution of the substance as not being absolutely continuous but molecular. But if the ether be either non-molecular, or molecular in some totally different sense from ponderable matter, we cannot with safety infer that the motion of a solid through it necessarily implies resistance.

The luminiferous ether touches on another mysterious agent, the nature of which is unknown, although its laws are in many respects known, and it is applied to the every day wants of life, and its applications are even regulated by Acts of Parliament; I allude to Electricity. I said that the nature of electricity is unknown. More than forty years ago I was sitting at dinner beside the illustrious Faraday, and I said to him that I thought a great step would have been made if we could say of electricity something analogous to what we say of light, when we affirm that light consists of undulations; and he said to me that he thought we were a long way off that at present. But, as I said, relations have recently been discovered between light and electricity which lead us to believe that the latter is most closely connected with the luminiferous ether.

Clark Maxwell showed that the ratio of two electrical constants which are capable of being determined by laboratory experiments, and which are of such a nature that that ratio expresses a velocity, agrees with remarkable accuracy with the known velocity of light. This formed the starting point of the electro-magnetic theory of light which is so closely associated with the name of Maxwell.

According to this idea, light may be looked on as the propagation of an electro-magnetic disturbance, whatever the appropriate idea of such a thing may actually be. The theory has quite recently received remarkable confirmation by the investigations of Hertz, who has shown that what are incontestably electro-magnetic disturbances, and are investigated

by purely electrical means, exhibit some of the fundamental phenomena of light, such, for example, as interference and polarization. It appears that these electro-magnetic waves are strictly of a similar nature to the waves of light, though there is an enormous difference in the scale of wave lengths, which in the case of light range about the $\frac{1}{50000}$th part of an inch, while the electro-magnetic waves which have been investigated by purely electrical methods range from a few inches to many yards.

I have ventured to bring this interesting subject before you in the course of the address which I have just delivered. I have not attempted to lay before you the evidence on which scientific men rely for the truth of the conclusions which I have mentioned as well established. That would have required, not merely an evening address, but a whole course of lectures. Neither have I made any allusion to possible bearings of the scientific conclusions on questions relating to religious beliefs. Anything of that kind I leave to your own minds; my object has been simply to present to you very briefly the conclusions of science in that limited branch which I have selected, distinguishing as impartially as I could what is well established from what is debateable or even merely conjectural.

His Excellency the Hon. T. F. Bayard (United States Ambassador).—Ladies and Gentlemen, I have great pleasure in moving "That our best thanks be presented to the President, Sir George Gabriel Stokes, for the Annual Address now delivered, and to those who have read papers during the Session."

Sir H. Barkly, G.C.M.G., K.C.B., F.R.S.—I rise with much pleasure, Ladies and Gentlemen, to second the vote of thanks moved by His Excellency the American Ambassador, whose presence amongst us to-night so shortly after his arrival in this country cannot but be deemed a special compliment to the Victoria Institute. We must all rejoice to welcome a supporter and friend of the principles to further which this Society was founded. The object of the Institute is to show as far as possible that there is not necessarily any antagonism between the teachings of science and religious truth; and so long as we are fortunate enough to obtain the assistance of gentlemen of the

scientific eminence of Sir Gabriel Stokes and others who might be named, who have taken a leading part in our proceedings, I think the Society will be able to successfully accomplish its mission. (Applause.) I may mention that his subject was most kindly undertaken by Sir Gabriel Stokes in consequence of the illness of the gentleman who had announced his intention of giving the Address. The President, at very short notice, came to the rescue. (Applause.) I have no doubt that the value and importance of the Address, which has just been given, will be appreciated by all and especially by those who are most competent to understand the subject, and I am sure you will agree with me that the thanks of the members and associates of the Victoria Institute and of all present are justly due to the President for the Address which he has just delivered, and also to those gentlemen who have read papers during the Session. I will therefore ask those who are in favour of the motion to signify the same by holding up their hands.

The resolution was carried unanimously.

The PRESIDENT.—I rise partly on my own behalf and partly on behalf of those who have read papers during the Session, to return you thanks for this vote. As regards my own share, I feel deeply the deficiencies in the Address which I have just delivered. I have made allusions to various scientific conclusions, which perhaps, only a minority of those in the room are acquainted with, and that, therefore, much that I have said has not been fully intelligible to perhaps the majority. Still I hope even those who have not previously attended to the subject, may have gathered some ideas as to the nature of these very curious and interesting investigations on which scientific men throughout the world have been engaged. I do not know whether all of those who have read papers during the Session are here present, but I return you thanks on their behalf also.

The Rev. Canon GIRDLESTONE, M.A.—Ladies and Gentlemen, I have to remind you that Sir Gabriel Stokes is here in two capacities, as the reader of a paper, and as presiding over this meeting, and I have been asked to propose a vote of thanks to the President for presiding over the meeting. It was very easy for him no doubt to preside over himself, and, I suppose, easy to preside over us, because we were so wrapped in attention, while he took us through infinite space, and told us about finite matter that we

could not help our attention being concentrated. As you go from this meeting back to your cabs, and to your carriages, you may look up to the heavens, and gaze at those fixed stars and wonder in your minds what there is between you and them, and when you have come to any conclusions, you will come at least to this, that the whole is the handiwork of Him who has given us these wonderful powers of mind whereby we can conceive of the Creator through the creation.

Admiral H. D. Grant, C.B., R.N.—I esteem it a great privilege to support this vote of thanks to our President. I cannot say that my studies have led me to consider the subject which has been dealt with, but I am perfectly certain that it has been put so simply and so intelligibly before us, that everyone must thoroughly appreciate the admirable Address to which we have listened. I also esteem it a privilege to speak, because, it is almost the first time since the Institute was founded—and I had the honour of being one of the very first founders—that I have had the pleasure of being present at an Annual Meeting with my friend Mr. McArthur. I remember Mr. Reddie, who has since passed away, saying to me once "when we get 200 members, what shall we think of ourselves?" and now we number nearly 1,500! If he had lived it would have been a great pleasure to him to think of the President of the Royal Society, being the President also of this Institute. I trust we have really followed out our motto in doing everything "To the greater glory of God." I am sure I am the mouthpiece of everyone here in giving a cordial vote of thanks to the President for presiding over us to-night.

The resolution was passed unanimously.

The President.—Ladies and Gentlemen, I am grateful to you for the vote which you have so kindly passed. At the same time, I am very sensible of my position of late years with the Society. I have not been in the Chair so frequently as I was before, or so frequently as I could wish; but I now trust that in the future, I may be with you more often. Of late, I have had one very difficult matter on hand, besides my own University work, and this has prevented me from being with you as often as I could have wished.

ORDINARY MEETING.*

D. HOWARD, ESQ., D.L., F.C.S., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

LIFE ASSOCIATE :—Captain F. A. Molony, R.E., Nova Scotia.

ASSOCIATES :—Rev. C. H. Barlow, India ; Douglas Public Library, Isle of Man ; Rev. A. C. Rowley, Lincolnshire ; Miss M. E. Vaughan, United States.

HON. COR. MEMBERS :—Rev. R. F. McLeod, Hertfordshire ; R. Scott Moncrieff, Esq., Edinburgh ;—

Papers entitled "Evolution and Design," by Mr. G. Cox Bompas, and "Archæology and Evolution," by R. H. Walkey, Esq., having been appointed for consideration ;
The former was then read by its author :—

EVOLUTION AND DESIGN. By G. COX BOMPAS, F.G.S., F.R.G.S., &c.

TWO knights, the legend tells, fought about the colour of a shield, of gold or silver. Each spent his strength to confound the other's belief, and dying, found the shield had two sides, one gold, one silver. So it is with most controversy, for truth is one but many-sided, and it is hard to see all sides at once.

Evolution and Design have perplexed and still puzzle many minds as if opposed to each other. This host of living beings so marvellously fitted to their place in life ; have they, it is asked, and their fitness come by evolution or design ? Inanimate nature suggests like thoughts. But are evolution and design opposed, or two sides of the same truth ?

What is evolution, and how have this new name and notion arisen ?

Evolution has been defined by one as "a change from an indefinite incoherent homogeneity to a definite coherent heterogeneity through continuous differentiations and integrations" which another has translated, "a change from a no-

* 2nd of 28th Session.

howish untalk-about-able all-alikeness to a some-howish and in general talk-about-able not-all-alikeness," but we need not thus abuse our mother-tongue.

Before Darwin, the origin of species was not much considered; though Linnæus, Lamarck, and others had given hints of the line of thought he elaborated. Men saw the various races of animals, distinct, incapable of crossing, limited in their range, and assumed that species were created where and as we now find them. So before geology opened men's eyes to the history of the earth's structure, stretching through a succession of ages, men thought the earth was created in seven natural days. Darwin traced back the history of animal life, and showed that the likeness of structure was due to common ancestry, the unlikeness to diverging variation moulded by natural and sexual selection and varying circumstance, and rising in the general view from lower to higher scale of being.

For this growth of animated being the name Evolution was devised, a convenient term though sometimes misused.

Sceptics hailed it as a discovery, as if evolution explained the origin of all things and dispensed with a Creator. Others therefore feared that evolution might undermine the faith, and denied its truth without caring to understand its nature. Some men of science are still jealous of design lest it should check investigation of natural causes, and some men of religion still shrink from evolution as savouring of infidelity.

In truth evolution leaves both creation and faith untouched, for evolution is but a mode of creation.

Evolution is the product of two factors, Life and Circumstance. Life, including growth, variability, reproduction, and the laws regulating these forms of life: Circumstance, or environment, which moulds the growth, defines the course of variation, and influences the nature of the offspring.

The distinction between these two factors is often forgotten. The term Evolution is sometimes misused to confound or efface it.

Life and its origin lay outside the scope of Darwin's inquiry. He noted and traced out the facts or laws of growth, of variability, of reproduction, but these attributes of life he did not attempt to explain.

The causes of growth as of life are beyond the interpretation of science.

Variation proceeds in a certain harmony, so that variation of one part of a structure is accompanied by variation of

other parts necessary for the harmonious development of the whole. This correlation is as inscrutable as life itself.

The continuity of life is built up by reproduction, itself as great a mystery as the first origin of life. The likeness of the offspring to the parent or remoter ancestor, and its unlikeness—the plastic nature of each animal, shown eminently in domestication—the limits of change—the special variability of individuals or organs which have themselves varied, tending therefore to further change. These and all such other characters of life Darwin sought to observe and record, not to explain. They are as inscrutable as life itself.

The main scope of Darwin's work was to examine and explain the circumstances which moulded the growth and variance of life to its present form, how natural and sexual selection and the struggle for existence restrained to its present bounds the exuberant growth of life. But Circumstance is the "antagonism" of Life, balancing it, and keeping it in due control.

Darwin attributed the origin of species to the preservation and accumulation of beneficial variations of structure, either by means of the advantage such variations would naturally confer in the struggle for existence, and which would tend to perpetuate them by natural selection, or by means of the preference excited in the other sex by such variations, which would tend to propagate and preserve them by sexual selection.

Thus natural or sexual selection may mould the growth of life into diversity, and so explain the origin of species; but these are only limiting and restraining forces, the negative side of evolution which includes and mainly springs from life and growth. To confound natural and sexual selection with evolution, or attribute to them creative power would be a mistake; as if a man should attribute the motion of the train to the friction of the rails, because that friction guided the train safe to the terminus, and saved it from catastrophe.

This distinction between Life in its origin and growth, alike inscrutable, and Circumstance, the force shaping that growth, and which is the special province of science, is a distinction vital, yet often forgotten. Its clear perception preserves from materialism, and from the notion that evolution is a creative power, instead of a name for the development of life.

Natural selection cannot create a new organ or structure,

but only preserve such variations of growth as are best adapted to the conditions of life. If the humming-bird's bill, or the insect's proboscis grows longer, its better adaptation to the flowers on which it feeds may cause that form to prevail to the extinction of the shorter bill or proboscis, but the flower does not make the bill or proboscis grow, nor cause the offspring to inherit the more favourable form.

It may be that the desire of the parent is impressed on its offspring—mother markings are well known. The effort of the humming-bird or insect striving to reach the honey of the flower may tend to produce in the offspring a longer bill or proboscis. Such unconscious maternal influence may be one of the causes of diversity of species. But if so, this cause is an attribute of life distinct from natural selection, which is the direct action of circumstance.

Whatever may be the nature and limits of hereditary influence, a subject often debated, that nature is a character of life, the limits are imposed by circumstance.

Natural selection is therefore only a secondary cause of the forms of life around us. It has moulded their present shape by checking and limiting their growth and reproduction, but can neither cause nor explain the life on which it acts, or the laws of reproduction. The origin and first cause of these is beside and beyond the interpretation of science.

I do not debate with those who deny the existence or necessity of the Author of Life, who prefer to suppose that matter created intelligence rather than that intelligence created matter, thus deifying atoms while denying a God. Such unreason does not belong to evolution as held by its greatest teachers. "The birth both of the species and of the individual," Darwin wrote, "are equally parts of that grand sequence of events which our minds refuse to accept as the result of blind chance. The understanding revolts at such a conclusion, whether or not we are able to believe that every slight variation of structure, the union of each pair in marriage, the dissemination of each seed, and other such events have all been ordained for some special purpose."

And Wallace, who claims with Darwin the discovery of natural selection, insists "that there are at least three stages in the development of the organic world when some new cause or power must necessarily have come into action" namely when vegetable or unconscious life, when animal or

conscious life, and when man's intellectual life began (*Darwinism*, p. 474).

I assume that life is an endowment from the Creator and that its development is moulded by circumstance.

Evolution therefore does not deny a Creator, but explains the manner of His working, and the laws and secondary causes through which He acts. These in their infinite complexity and marvellous adaptation it is the province of science to examine.

If life flows direct from its Author, how is it as to circumstance? Is this chance, is it the mere result of natural law, or is it subject to ever present control?

Naked chance is out of fashion. No one now teaches that the Universe is a fortuitous concourse of atoms. But dressed in philosophical garb, disguised as Natural Law, chance is still much in vogue.

Law without a Law Giver,—Force without control, is but chance. The throw of the die is not less chance because it falls by gravitation. There is no real difference between a chance concourse of atoms and a chance coincidence of circumstances, each alike must produce not Kosmos but Chaos.

Life and Circumstance from which the Kosmos springs must be designed and controlled.

The existence of evil in the system of nature has, however, led some who admit a Creator and Author of life to suppose that He has ordained fixed laws to work out their results in nature without after control or interference. But is this hypothesis logically consistent?

Grant that life and growth are endowments of a Creator, but that the structure of each animal has been modelled in its growth to its present form by the circumstances surrounding itself and its progenitors, by climate thickening its fur, by food modifying its teeth, by distribution of land and water changing a four-footed mammal into the likeness of a fish, by struggle for existence eliminating the inferior types.

What is that struggle but the competition of exuberant life, its force due to and measured by the quantity and energy of life. That struggle therefore has the same source as life itself; that cogent circumstance must be designed. Why has the cod seven millions of eggs, the elephant but one offspring: yet each justly balanced against the destructive forces to which it is exposed, and keeping its place in nature. Is this difference chance or planned by the Giver of life?

The races of man if their multiplication were unchecked might in a few centuries fill up this globe, but the reproductive power of some of the lower animals, fishes or insects, is thousands or millions of times greater than that of man. How is the balance of nature preserved, unless the same Creator who pours out this flood of life has planned and set its bounds?

Food, another cogent factor in building up the forms of life, is itself the supply of animal and vegetable life therefore not chance, but due to the Author of life; and who will affirm that sun and earth, climate and land and sea, which help to mould the forms of animated nature, are freaks of chance?

Insects are endowed with taste, smell, and sight, which lead them to various flowers stored with honey, breathing fragrance, and dressed in bright colours, and by the insects' visits the flowers are fructified. The mutual adaptation of insect and flower has grown with the evolution of both. Are the life faculties, the insect senses an endowment, and the existence of flowers a chance? Neither the insect nor the flower could become adapted to the other unless each had the special life and growth and variability required to make the one the complement of the other, and with these each has been endowed. Is it a reasonable hypothesis that the two being thus endowed were brought together by a chance coincidence of circumstances to work out each other's development?

The ocellated plumage of the peacock and Argus pheasant has been ascribed by Darwin to the gradual influence of female preference; by Wallace to superabundant vitality in the male; but this preference or vitality and the variability of the feather on which they act are alike characters of life, and therefore evidence of design.

Like reasoning may be applied to every animal structure and to the whole order of nature, showing that natural and sexual selection and the struggle for existence are not independent forces, but mainly the result of the interaction of the forces of life, and therefore, like life itself, the offspring of design.

Evolution is, moreover, admittedly subject to law; but law rightly understood implies design. It is the expression of the will of the Law Giver; and every law in proportion to the wisdom of its Giver is adapted to control the varied circumstances to which it is to apply. A perfect law would be adapted to work out its ends in every circumstance.

Are not the laws of nature thus adapted, can they be without control and subject to chance?

The truer question is not whether there is evidence of design, which life and law alike prove, but how that design operates, whether by direct interference, or through a chain of secondary causes. Admitting in each case creative energy and control, the more recondite is the chain of causes, the more profound would appear to be the creative wisdom.

A time-piece which, as we say, goes of itself for days or weeks, is more admirable than a dummy watch, whose hands must be turned with the finger; a paper-machine in which rags at one end become paper at the other is a higher exhibition of intellect than the process of hand-made paper; so those who insist most strongly on the evidence of design in the creation do not oppose, but should rather compete with the veriest agnostic in the endeavour to trace back to the furthest the method of His working who worketh all things according to the counsels of His will.

If law is the will of the Creator, wherever that law operates, that will controls. But its vigour is hourly seen in the exuberance of life.

Each new-born life is a new being, a new creation, of origin as mysterious as the first origin of living beings upon earth, and springing from the same source of life. The parents are but secondary causes, and can no more create a new life than they can form a star.

The up-springing of life in all its reproductive forms is proof of the ever-working power of the Creator as plainly as the existence of life is proof of a First Cause.

And circumstance works by laws of life whose wise adjustment passes the profoundest search of human intellect, being the constant expression of the Creator's will.

So Evolution is Design.

The Chairman (D. Howard, Esq., D.L., F.C.S.)—We are much indebted to Mr. Cox Bompas for placing before us one phase of this question. We shall be very glad to hear any remarks upon his paper.

Mr. H. M. Bompas, Q.C. (a Visitor).—There are one or two remarks I would venture to make on this paper, with the whole of which I entirely agree; and one is this—that even if we did not assent to the whole of the author's argument with regard to evolution being only a greater proof of design in creation (with which I entirely agree); still, outside all the circumstances and facts to which evolution has ever been applied, I take it that there are many proofs of design in the world which should be quite sufficient to prove the wisdom of the Creator under any view that might be taken of evolution. Take, for example, the fact that water almost alone as a liquid becomes lighter when it becomes solid, without which, I suppose, life (except perhaps just at the equator) would be practically impossible, because our rivers and lakes would be frozen to the bottom, and water would therefore be wanting in the winter time. That curious quality of water cannot be the result of evolution, so far as I can understand it, on any theory of evolution that can be given, and yet surely it is a striking proof of wisdom and design in the creation of the world. So that while evolution is of itself, as the paper says, to most of our minds, only a greater proof of wisdom than direct creation would be, we have, in addition, evidence of design to which evolution would not be applicable. As to the passage which refers to those who think that imperfections, as they are called, difficulties, and strange suffering, which are found in the world, are inconsistent with the laws which regulate evolution and other matters of the world, being the result of wisdom and design, it occurs to me that it may be true that the fact of law and the fact that creation has to so large an extent, apparently, been through law, *may* account for some of those penalties which we should not otherwise expect. It is essential, if the world is to be governed by laws, that these laws should be regular, and I suppose it would be absolutely impossible for anyone to live in a world which was not governed by laws, where they could not reckon on the result of each particular act they did in the future as well as in the past; but if you have regular laws it must lead, sometimes, to results to which one would wish otherwise, but which are less evil in their results than irregularity would be. Take the very instance that has been given you of a clock which goes for a considerable length of time. It must go regularly, and you cannot by that clock provide for any special peculiarities, which you might

do if you moved the hands according to your particular wish on any particular day. These are results which regular law must produce.

Professor J. F. Blake, M.A., F.G.S.—I may say that I agree with what Mr. H. M. Bompas has said, but I should probably go a little further. I do not think it is a question of science, whether the whole course of evolution itself is or is not a matter of design and due to a Creator, but it is rather with the methods that antagonism comes out between different schools of thought. Take the well known instance that everybody refers to, viz., the length of the proboscis of the bee or the butterfly, and the tubular shape of certain flowers. The question is whether they came to be adapted to each other without intention, or whether there has been a design to adapt the one to the other. That is where the difficulty comes in, when you come to particular cases. I quite agree that evolution shows design, though I have a little doubt whether the distinction between the two views is quite clearly drawn out in this paper. There is another point to which I would call attention on the second page of the paper:—"circumstance or environment, which moulds the growth, defines the course of variation, and influences the nature of the offspring." It is a very common thing for people to believe that it is environment only that works the evolution, and so far this paper accounts quite correctly for circumstance being a matter of design; but besides all this there is, I think, a definite tendency in evolution independently of circumstances. Take the eye or a feather, these are two of the most remarkable things we have to account for—what is the reason we may ask, why there should ever have been a feather? It seems to me so extraordinary a thing—so marvellous in its structure—so admirably adapted to its purpose, that I cannot conceive such a structure was ever produced by chance variations controlled by environment, unless there was a certain definite intention, so to speak, to produce a feather in the end. We may call the production of a feather, if we will, one of the properties of animal life, just as the freezing of water at a certain temperature and it then being lighter than unfrozen water is one of the properties of water. Why certain things either animate or inanimate should have certain properties is a matter of speculation or faith, which we cannot discuss scientifically.

Mr. L. THRUPP.—The author began his paper by saying that truth was like a shield that has two sides to it. Where he has kept on one side I agree with much that he has said; but I doubt whether he could contend for a moment that evolutionists will go from side to side as he has done, or admit half the statements that he has made. Both Darwin and those who follow him, appear to me to contend for self-evolution without the interference or guidance of Providence, and to have caused in the minds of a large number an increased infidelity. It has been said that if evolution be true, it merely shows that the Creator originally designed the universe and set it working rather than interfering constantly during the progress of the earth's history. That is the position the author's mind seems to me to occupy. Of course, if that were the case he can say at once that evolution is the original design of the Creator, and having left it there, it goes forward in fulfilment of His design. Now, in the first place, the author has alluded to a very common phrase of some evolutionists who declare that the world has been started like a clock, with all the previous arrangements for its going, and having been so constructed it has been left to work without further interference. Here you see at once that such a theory, whether right or wrong, appears to exclude the Creator from an over-ruling Providence and further interference in the world. It therefore becomes a very serious question whether such an evolution theory is true or false, because it undoubtedly undermines all, or the greater part, of those points of faith upon which we rely, I should say, as the very basis of our religion, for the basis of our religion itself is the relation between the Deity and man, and if that relation be abandoned after the first creation of the world, and the world is left to the working of things like a clock, it can no longer be, for a moment, regarded in the same light in which we have always been taught—a constant communication, as it were—between the Deity and man, and His over-ruling providence at all times and all seasons. Hence the issue is far greater than that alluded to in the paper, and I think it is quite idle to attempt to amalgamate the two ideas, because they appear to me antagonistic. As to some parts of the Darwinian theory, they might be rejected at once. I allude to sexual selection. Professor Wallace in his last work on Darwin, said they could not be entertained any longer, that they were not correct and must be dis-

regarded. And also the same author, who you remember was the co-originator of the evolution theory, has given strong proof against the theory itself when he alluded to three grand stages in the progress of creation, which could not be accounted for by the evolution theory at all, and "must have proceeded from the action of the spiritual world" (that is the expression of Professor Wallace). What he means by "the spiritual world" I do not profess to say, further than that we must be cautious in fixing our own opinion on it, for he may not mean by that expression exactly what we mean. But he does show you there are three grand stages to which the evolution theory does not apply, and that a direct interference from the spiritual world, as he calls it, or, as I should call it, from the Supreme Spirit, has brought about the rise of the organic from the inorganic, the establishment of mind in the animal, and, subsequently, of spirit in man.

I cannot expect to take up the time of the meeting unreasonably; but I do bring before you one point which should never be slurred over, and that is the question of man being a spirit. If the evolution theory be true then every created thing in this world, be it plant, or animal, or man, in all its parts and in all its characteristics must have arisen from the same cause.

How can we believe, if that evolution theory be true, that there is an immortal spirit? It is impossible, unless you contend that the spirit exists right back through all animal life. You must either do that or come to some period when spirit was introduced into the world. Then, if it could not have been evolved in such a way, and yet the doctrine of evolution is true, there is but one final result to come to, that man is like the brutes that perish. The more I read books on evolution, the more I am convinced that the whole theory is utterly unsound, and has no foundation whatever.

The CHAIRMAN.—Before asking the author to reply may I sum up the result of my own reading of the theory of evolution, and that is to advise everyone, when they speak and read of evolution, not to attribute to Darwin what he did not say, and to be sure of what is meant by the word. I do not know one word among the many words that have a dubious meaning, which is used in more widely different senses than *evolution*. (Cheers.)

The AUTHOR.—I have a few words to say in furtherance of what the Chairman has said, and in reference to what Mr. Thrupp said just now. If by evolution was meant self-evolution, as I

understand to be held by Haeckel and some others of his school, meaning that atoms by degrees evolved themselves into life and sense and intelligence, Darwin would have considered that, I believe, revolting to our common sense. That is not the evolution I speak of, and the object of the paper is to show that that is not the evolution theory held by Darwin or Wallace; and further to show that life is the gift of the Creator, that life is the active force of evolution, and that environment is merely a negative force; and therefore that creation,—whether *evolution* or *environment* be used to shape the thing created,—is the work of God, the Creator, Who, as well as life, gave also intellect and spirit, so that the whole creation is due to His design. (Cheers.)

COMMUNICATIONS RECEIVED

ON THE FOREGOING PAPER.

Dr. D. Biddle writes:—

It is quite true that, rightly considered, evolution is not incompatible with design, but rather enhances our conception of the ingenuity displayed. We, however, who are Christians, regard the Deity as "knowing the end from the beginning," and as using evolution simply as a method. Extreme evolutionists, on the contrary, rarely do this. For the most part, their God is Nature, or if they be deists of an optimistic tendency, they regard the Deity as learning by experience, or (at least) feeling His way towards the perfection of His works. A clearly cut design, even though worked out through the centuries, partakes too much, in their eyes, of the "carpenter-theory" of creation. Their preference is for a Deity resembling those novelists whose characters evolve themselves, by a kind of current cerebration, whether their own or the author's being a matter of small account. Evolution of the fashionable kind depends upon *chance-variations*, and, in so doing, puts itself outside the pale of true science, which would bring all variations under some law. Indeed, it is not difficult to see that he who could observe and accurately chronicle a veritable chance-variation, would record a greater miracle than any to be found in Holy Writ, and would in more telling terms confound the philosophy of

Hume than all the Christian apologists put together. Philosophy itself would then have produced the contrary to experience, and although the variation might be trifling, still, where the question of degree is excluded, the occurrence would be no less convincing than if one rose from the dead. Truly, they have no call to sneer at miracles who accept chance-variations.

The Rev. J. M. Mello, M.A., F.G.S., writes:—

I venture to send a few remarks on Mr. G. Cox Bompas's paper on Evolution and Design, for I quite agree with him that "Evolution is Design." The late Professor W. Clerk Maxwell in a clever parody of one of the British Association Addresses, tells us how the philosopher bids us contemplate "the seeds of the mighty world."

> "The pure elementary atom, the unit of mass and of thought,
> Which by force of mere juxtaposition to life and sensation is brought,
> So down through untold generations transmission of structureless germs
> Enables our race to inherit the thoughts of beasts, fishes and worms."

Thus we are in our highest development the outcome of a long process of evolution according to that hypothesis which is now so widely accepted, although it is still confronted with more than one serious difficulty.

But granting that its truth be finally established, and that the old view of special creations of species, or at least of genera according to definite plans give place to the newer theory and be regarded as untenable, I do not, I must confess, see how this would in the slightest degree affect my belief in design in creation; it would not relegate to chance or to "a fortuitous concourse of atoms" the wonderful adaptation to environment, the fitness of special organs for special purposes which we see on every side of us, and which, by whatever means or process of change these may have been brought into existence are clear evidences of Thought and therefore of Design. There are some who may sneer at what they term "the carpenter-theory" of the Universe; but is that which it implies the less true? If we can see the adaptation of means to an end in man's work, we do not say "Oh, that is a mere matter of chance," but we at once recognize underlying the complicated machine, or the simple tool, the previously existing plan, the evidence in them of a set purpose, and from this we rightly assume that a thinking mind, a Personal Thought, *not blind unreasoning forces*, must have been the ultimate cause of what we see.

Does it not stand to reason that you cannot bring out of a thing that which has not been first placed in it; you cannot bring out of it more than was placed in it; in other words you cannot "evolve" that which was not first "involved."

Say then that all the varied and complicated phenomena of nature around us, that we ourselves are the outcome of the primordial "structureless germs," the atoms, those "small incompressible spheres of our "poet-philosopher." If we are what we are, and if other things are what they are, it is because all that we and they have become was wrapped up in a germ, was in it in the beginning, was *involved*, and to my mind Evolution can have no explanation save on the assumption of an Involver Who has planned all from the first, for all that we see implies Thought, Intelligence, and Design, and therefore a Personal God.

Professor H. Langhorne Orchard, M.A., B.Sc., writes :—

The chief merit, in my judgment, of Mr. G. Cox Bompas's interesting paper ("Evolution and Design") consists in showing that both life and circumstance are inexplicable apart from design and will in the Creator. I note that the author speaks of the fall of a die being the result of "chance :" this is hardly scientific. That fall is as truly the effect, or result, of law as is the earth's revolution round the sun, and can be calculated mathematically. With regard to "chance" it has been well remarked that it is "an expression which in science can only stand for a cause not yet discovered."

SECOND PAPER.

The following paper was then read by the Rev. R. F. McLeod, the author being unavoidably absent abroad :—

ARCHÆOLOGY AND EVOLUTION.

By R. Huyshe Walkey, Esq.

THE Science of Archæology is now so far developed that it has as much right to tell the world what it thinks and teaches in regard to the theory of "Evolution of Man" as one of the older sciences.

Of course, I am far from the first to give its testimony; but it seems to me that those who have already done so, have treated archæology only in conjunction with geology or palæontology; whereas, just as it is the one science which devotes itself entirely to pre-historic man, so it is the one branch, of all the branches of science, which is most intimately affected by evolutionary theories. If there ever was a connecting type, half man half anything else, its remains would lie within the field of archæological study. It is always difficult to lay down any hard and fast definition as to where one science begins and another ends; thus, in the present case geology and antiquarianism blend into the two extremes of archæology, while palæontology runs all through it; but it may I think be pretty accurately described as the study of pre-historic man, his remains and surroundings. And it is as such that I have claimed for it

a more direct interest in the evolution of man, than is felt by any other branch of science.

So far as we at present know, it seems to give no uncertain answer to the problem; nothing less, in short, than a complete negation of the evolutionist theory. Whether the embryo of a man resembles most the embryo of a carnivora, a lemuroid, or a marsupial, or whether it resembles any of them at all, is nothing to the archæologist. The question resolves itself into the simple form:—Is there any reason to suppose that there ever existed a race of beings, standing half way between that of man and that of the great anthropoid apes? if so, has that race left any implements or other trace of its existence? and was primitive man any nearer to such a race than the man of the present date is?

The greatest difficulty lies in answering the first part of this question, and I shall therefore take it first and devote more attention to it than to the second part. First, then, if there ever existed a great, semi-simian, semi-human race, would it have left remains other than its bones? The answer to this question appears to me to be in the affirmative. Our knowledge of how far advanced the chimpanzee and other great apes are, entitles us to expect that such a race would have arrived at the knowledge of the use of the simpler forms of implements, and probably also of the knowledge of fire; also it should be carnivorous. Thus, we may fairly expect to find traces of this race associated with rude implements and traces of fire, in the deposits immediately preceding those in which the earliest remains of man are found. I do not think I am exceeding the limits of positive discovery in saying that absolutely no formation containing such remains is known to exist. Frequently, in conjunction with beds bearing relics of Palæolithic man, we find an underlying layer devoid of human relics, yet containing those of mammalia co-existent with him at a later period. Sometimes the remains of man occur only near the surface of a bed, while those of the co-existent mammalia occur equally throughout its entire thickness, showing that man had not appeared at that spot until late in the period of the bed's formation. But nowhere do we find the traces of a pre-existing semi-human race. No portion of a skeleton, such as might be ascribed to an animal of this nature, is present either preceding or co-temporary with Palæolithic man.

Of course any supposed trace, later than the first appearance of fully-developed man, would be only doubtful evidence, since it would be possible to attribute any such to personal deformity, or else to tribal deformity, such as that practised by the old Bretons, the Amyara, Flathead Indians, and other races; or to some peculiar habits of life led by a particular tribe, such as we know to be a possible medium of slightly altering the skeleton of man. Many such instances are noted in Prescott's *Natural History of Man*, and other anthropological works. I should perhaps notice the few supposed remains of man, or something like man, which are ascribed to a date earlier than that of the cave and river drift men. Of these, with the exception of two flakes found at Crayford and Erith, none have been satisfactorily proved to belong to undisturbed strata of the age assigned to them; and as regards these two exceptions, as no trace of bone has been discovered in connection with them, they are of no value to evolutionists.

With the accounts of Miocene man I need scarcely linger; they are too utterly wanting in anything like an accurate account of their discovery. As regards the supposed remains of Pliocene man, they, too, are gravely wanting in anything like strict scientific proof, and are disbelieved in by so many high authorities that at present they are practically worthless. I may, however, be allowed to point out that even those who claim for them their great antiquity assert also that they are the work of actual men.

Thus, if we put these accounts aside, as we safely may do, we find man as *well-developed* man appearing suddenly late in the Pleistocene period, without any trace of a predecessor. Here we are met by the answer that man is not a native of Europe or America, but of Southern Asia; and this is, as far as we know, true; indeed, both the study of prehistoric and of historic times points so clearly to this that there can hardly be a doubt of it in any mind, especially if we consider that the Biblical account also asserts it. Here arises the grave difficulty of choosing a site on which the first stages of evolution took place; to meet which problem Haeckel and his followers have supposed the existence of a tract of land, either islanded or connected with Southern Asia, and situated where is now the Indian Ocean, which they have named Lemuria. This is possible, but it is a theory which shows the weakness of the "evolution of man" more than perhaps any direct disproof could do. Neither

does it accord with what we know of Palæolithic man. The excavations of archæologists in Palestine and India display just the same sudden commencement of the human race as do those of Europe and America. Man is connected with the same fauna, and no trace of any evolution is visible. We know that during the first stone age man spread throughout Europe, Asia, America, and possibly even to the islands of the Pacific; which knowledge points, not only to this having been a long period, but to its having suffered no great geological changes, and this is amply proved to have been the case by other facts. Therefore it is not likely that "Lemuria" would have been submerged until the break between the Palæolithic and Neolithic ages.

Now from what we learn of the earliest races of men we find them to have been great and successful hunters, flesh eaters, and wanderers all over the earth; and we may fairly demand the same habits, though allowably less developed, from his prototype: therefore we cannot suppose the prototype to have been confined entirely to Lemuria. If Palæolithic man reached so far as North America, and throughout his wanderings was a carnivorous animal, with a knowledge of drawing, of making ornaments, and efficient weapons, &c., so according to the laws of evolution, must his prototype have spread over a considerable area (at least as far as India, Palestine, and Southern Europe), so must he have been, at any rate, partially carnivorous, and so should he have had implements. Thus, in these countries, we have a fair right to demand traces of our semi-simian ancestors; even should we allow Lemuria to have ever existed outside the brains of evolutionary theorists. But no such a type, that has stood the test of scientific analysis has ever been discovered, though sometimes attempts have been made to bring forward one; as for instance the famous Neanderthal skull. All the labours of archæologists throughout the world have failed to substantiate any sign of our great progenitor. The actual proof or disproof of Lemuria I must leave to geologists; but I have endeavoured to show that though its disproof would strengthen the hands of the believers in a special creation, yet its existence is not either fatal to them or sufficient to account for the total absence of any trace of semi-developed man in those parts of the world where we have a right to demand them, and that our right to demand them is justifiable on strictly logical, scientific grounds. This then is the answer to the first half of the question as it

affects archæology, and to me it appears to be directly in opposition to evolution.

To the second part: "Was primitive man any nearer to a supposed semi-simian prototype than modern man is," we can, so far as I know, give an even more definite negative than to the first half. The splendid manner in which Professor Boyd-Dawkins has set forth the similarities between the Palæolithic cave men and the modern Esquimaux brings with it a proof that man was man in those days; but there are, I think, good grounds for assuming that the cave men were a vastly more intellectual people than are their Esquimaux descendants. If, for instance, we study carefully the works of art (engraved representations of animal and plant life) left by the cave men, together with similar ones made by modern Esquimaux, we cannot but be struck by the falling off of taste evinced in the latter; it is as marked as the difference between the art of the fourteenth and seventeenth centuries A.D., and not only is this so, but if we compare the artistic spirit of these old cave men with that of any existing savage race, we find the difference equally great. It is necessary to imagine a savage with the artistic feelings of a Landseer, to account for the production of such work as we find on many of their implements and relics. On pp. 238–9 of Professor Boyd-Dawkins' book, *Early Man in Britain*, are figured three arrow straighteners: one of Esquimaux, the others of cave-man workmanship; these, we are told, are so much alike as to be classed together were the real difference of their origins to be forgotten or unknown.

This is at once true and false; they are, indeed, made on the same plan, as also are ancient and modern Gothic and classic buildings, but—to anyone of artistic feeling or education—it will be equally evident that one is a miserable, stereotyped, and barbarous imitation of the other.

Take, again, a drawing of a reindeer done by a cave man and put it beside that of one executed by an Esquimaux: the same animal served as a model to both and was probably more constantly before the Esquimaux than the cave man, but how vast a difference is apparent in the minds of the two draughtsmen! In one we see an artist possessed of high and accurate powers of grasping his subject, in the other we see merely an unimaginative savage making a lifeless attempt to imitate something constantly before his eyes. These are but two examples out of many which might be

given as proofs of how vastly higher was the artistic talent of Palæolithic man than is that of his modern descendants. What, then, is the inference to be drawn from this? The study of history and anthropology shows us that art is the output of high intellectuality, and that an artistic nation is invariably more intellectual than is an inartistic one. If only these drawings remained, we could oppose evolution on the ground that primitive man was more artistic and therefore further removed from a simian type than is any known uncivilised nation. If the Palæolithic skull of Duruthy Cave is, as French archæologists claim, of the same type as those of Cro-Magnon, it is exactly that which we should expect to find belonging to a race of such high artistic feeling.

It has been held that Palæolithic man was more densely covered with hair than are the men of the present day; but this view is really based on the most shadowy grounds. To argue from a few incised lines on a rough sketch of a figure that that figure was hairy, when at the present time we know that it is not so; and when the lines themselves may in almost all, if not all cases, have a more natural interpretation as being rough attempts at shading, is both absurd and unscientific. Besides, too, the fact that Palæolithic man wore gloves similar to those of the Esquimaux (and from this we may pretty safely infer that he wore other clothes, equally similar) tends to show that he was little better protected by nature than are his descendants.

Thus, so far as we at present know, the theory of special creation is that which archæology tends to confirm. There is an answer which is sometimes brought forward to meet this part of the question; *viz.*, that the space of time between now and Palæolithic times is so short that no difference can therein be expected to have taken place in the human structure. But this would throw back the time of man's evolution to so vast a date, and to a time when we have every reason to suppose the world was utterly unfit for human occupation, that it is practically untenable. Also if, as I have endeavoured to show is the case, Palæolithic man was of a high type—and from the absolute similarity of his implements we are justified in supposing this to have been the case throughout the whole of his distribution—we may argue that, as since then he has deteriorated so much as to be now represented by the modern Australians, Bushmen, and Terra del Fuegians, or even more intimately by the Esquimaux, the time which has been sufficient for so con-

siderable a degeneration, as has in all these instances taken place, should also have been long enough to allow of a very appreciable amount of evolution. Such, however, has not taken place, so that we need give no great heed to this argument. That our knowledge is as yet but fragmentary all will own; but that, such as it is, it all tends to disprove the theory of evolution, is a conclusion which will, I think, be more and more forcibly impressed upon all students of archæology.

The Chairman (D. Howard, Esq., D.L., F.C.S.)—We have, in this paper at any rate, a portion of the other side of the shield, and one that is exceedingly interesting. Of course we are always met with difficulty between the discussion of negative and positive evidence. A friend of mine only yesterday was saying to me that he believed he ought to be the owner of large estates. I am not learned in the law of real property, but I tried to make him understand that it was not necessary for the present owners to disprove that he was the heir, but for him to prove that he was. I am sure I may convey your thanks to the author of this paper and also to the Rev. R. F. McLeod, who has so ably read it. We shall now be glad to hear any remarks.

Professor J. Logan Lobley, F.G.S.—In the first place I would remind the meeting of the truthfulness of the remark made by your Chairman, as to the care which we ought to exercise when we speak about this word *Evolution*, which is abundantly exemplified, I think, by the second paper that has been read. The term *evolution*, as used by the author of the first paper, certainly did not, to my mind, suggest the idea of self-evolution—of matter having inherent qualities that are inherent in them apart from the fiat of a Designer, and therefore I was much struck by the observation of one of the speakers to the effect that, if evolution is to be conceded we must dispense with the presence of an Almighty Creator. That has never occurred to my mind at all. We must always recognise the constant presence—the over-ruling control, supervision and sustentation—of an Almighty Creator, whether we hold the

doctrine of evolution or not. The clock works that have been used as an illustration will go for a certain time, but the clock will stop eventually if there be not some one to wind it up. We must remember that laws are only laws as long as they are continued in their operations by the Divine Creator of those laws, and therefore we can by no means dispense with the presence of the Infinite Creator simply because we assent to the general idea of evolution. The same speaker seemed to think that the evolution theory was discovered or formulated by Darwin. Now Darwin is by no means the author of the evolution idea. Lamarck long ago formulated the idea as it applied to organisms. Evolutionism, in the wider sense of the term, is due to Herbert Spencer. Darwinism and Evolutionism should not be used interchangeably. Darwin was not the author of evolution, but of an hypothesis to explain the *modus operandi* of evolution which we may disallow, without discarding the idea of evolution. So far from speaking of an evolution *theory*, it seems to me that the author of the first paper takes it for granted that evolution is a *fact*. We may use the term *evolution* in one sense or another, as the Chairman has said but we cannot get away from the fact of development. Every student of Palæontology knows that there has been development of organization. We do not find the remains of Mammalia in the Cambrian rocks, not any until we reach to the Triassic. We cannot find the remains of birds or even reptiles in the Silurian, or of fish in the Cambrian. But all these are in the Mesozoic rocks. Although evolution may be denied, we cannot get away from the fact of the development of life forms, and to Darwin and Wallace is due the credit of having formulated the theory that development has been brought about by natural selection.

There is another point in this paper that I should like to say a word about. The author says, "But this would throw back the time of man's evolution to so vast a date and to a time when we have every reason to suppose the world was utterly unfit for human occupation, that it is practically untenable." I want to know on what evidence it is asserted that "the world was utterly unfit for human occupation" at any time during the Tertiary period—and I will not exclude the so-called Glacial epoch. We find existing forms of life in rocks far earlier even than Tertiary deposits. We find the same forms of life as existed in the Jurassic period, now living in abundance in the Australasian seas,

and, more than that, we have the same forms of life as existed in the Cambrian period, in multitudes, in the China seas. Now, if living forms of life could flourish in the Cambrian period must not the general cosmic climatal conditions of the earth have been the same as now? There are also the ripple marks as well as rain pittings on the sandstones of Cambrian age to show that the sun rose and set, the tides rose and fell, the rain descended and the winds blew as at present, and therefore that the same general cosmic conditions existed even in Cambrian times as now obtain. Why therefore is it stated that the earth was not fit for human occupation by man previous to, say, Pliocene times? The paper deals with the evolution of man from a semi-Simian type. Of that it may be admitted there is perhaps no evidence, and although the imperfection of the geological record is usually cited as a reason for palæontological links being missing, it does not seem to me to be altogether adequate, but, on the other hand, the general development of vegetable and animal types of life, *apart from the evolution of man from the lower animals*, is not merely a theory, but a known fact to all palæontologists and to every student of geology.

Rev. Mr. CHERRILL.—What is intended by these "cave men"? They are the only men of those remote periods mentioned in the paper, and they are said to be the ancestors of the Esquimaux, and to have degenerated; but is this an exact statement?*

The CHAIRMAN.—It is interesting to note that as far as we can go back we find men were intelligent, and showed a very decided sense of intelligence, and that the evidence that is required of a missing link is missing. The triumph of Professor Mendeleef's theory of the laws of chemistry was when one of the missing links, in the form of a certain metal, was discovered, and I think we may assume that the semi-Simian ancestry of man is not to be accepted until evidence is produced of the existence of forms. It seems to me that the evidence points that way, and that

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* Professor W. Boyd Dawkins, F.R.S., writes in regard to this remark, "Mr. Walkey is right in his quotation of my view as to the Esquimaux."—ED.

certainly these early pictures referred to are amongst the most interesting discoveries, and how they succeeded in representing nature so vividly, which the average Esquimaux could not equal.

The meeting was then adjourned.

COMMUNICATION RECEIVED

ON THE FOREGOING PAPER.

Mr. Philip Vernon Smith, M.A., LL.D., writes :—

The two papers read this evening are interesting complements the one to the other. My friend, Mr. Bompas, has adduced cogent reasoning to prove that what may be called, from the human standpoint, natural evolution, is accomplished by design. May not another argument in favour of this conclusion be deduced from what, on the other hand, may be called artificial evolution? Besides that which has taken place without man's intervention, or without direct purpose on his part, what changes both in *flora* and in *fauna* have been effected by *his* deliberate design? New varieties of garden flowers, fruits and vegetables have been evolved, or existing species have been developed and brought to perfection. Among the domestic animals, dogs, horses, cattle, sheep, pigs and poultry, similar improvements have, by care and attention, been effected in their physical form and faculties. Can we believe that man has done this by design, and that the Supreme Will and Intelligence, on the other hand, left to chance and accident the more marvellous feats of Evolution—if to Evolution they be due—with which the natural world abounds?

Mr. Bompas has well distinguished between vegetable or unconscious life, animal or conscious life, and man's intellectual life. It is interesting, however, to observe the evolutionary results which the higher of these lives produces upon the lower, no less than the lower upon the higher. The reciprocal action of vegetable life on animal life, and *vice versâ*, has been referred to by Mr. Bompas. Not less noticeable is the metaphysical effect produced on domestic animals by the intellectual

life of man. All of them, and more particularly the horse, the elephant, and the dog, evolve, from their intercourse with man, a degree of sagacity and intelligence, to which, in their wild state, they are strangers. This intellectual evolution is, in part, designed so far as man is concerned. But in part it is undesigned; as when a dog learns to understand the ways and even the conversation of his masters to a greater extent than he has been intentionally taught. So far, however, as it is undesigned by man, it is part of that general Divine design in the Universe, which has ordained that the higher forms of life shall influence the lower, and that mind shall act upon matter in ways which we cannot fathom or explain.

ORDINARY MEETING.

D. Howard, Esq., D.L., F.C.S., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following elections took place :—

Members :—Lieut.-Col. A. M. Arthur, London ; G. F. Healey, Esq., Lancashire.

Associates :—Rev. R. Adams, M.A., T.C.D. ; H. Keeble, Esq., London ; Rev. W. Summers, Egypt ; Mrs. Vaughan, Glamorganshire.

The following paper was then read by the author :—

HOLY SCRIPTURE ILLUSTRATED AND CONFIRMED BY RECENT DISCOVERIES IN PALESTINE AND THE EAST. By Professor E. Hull, LL.D., F.R.S.

THE present period has been one of searching inquiry and criticism regarding the authenticity and authority of Holy Scripture; the criticism—often euphemistically called "the higher criticism"—has sometimes been carried beyond all reasonable bounds; but this is a subject which I cannot further touch on as it is outside our present object.

But it is also a remarkable fact that within the last few years there have been many discoveries, especially amongst the ruins of Palestine and adjoining countries, which have tended to corroborate in a remarkable degree the accounts of events recorded in the Bible, particularly in the Old Testament. As these events are essentially connected with the assertion of the miraculous interposition of Almighty power, without which they become illusory and incredible, it is important that those who deny the possibility of such interposition should be confronted with evidence going to show that the narratives are trustworthy, and stand on evidence which

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* 3rd of 29th Session.

would be considered ample in the case of any other document. The whole account, for example, of the Exodus is saturated with the miraculous; and to eliminate this element would be to set up a history of events absolutely unintelligible. Either the account of the Exodus must be taken with its statements of the interposition of Almighty power at successive periods and in critical stages of the Israelitish history, or the whole must be relegated to the catalogue of mythical narratives such as the *Odyssey* of Homer or the *Æneid* of Virgil. I refer to the Exodus as a typical case on which it is desirable to obtain whatever light can be thrown by modern research; for if we can show that such research has resulted in the identification of the localities and sites of the events recorded we have a strong argument for maintaining that the events themselves actually occurred and that the narrative is authentic.

I do not intend on this occasion to dwell at any length upon the subject of *The Exodus;* having done so on several previous occasions, particularly at the meeting of the Church Congress at Carlisle. But I desire to point to the fact that this narrative is so intimately mixed up with topographical details that they are essential to its credibility. If the physical features of Egypt, Sinai, Edom, Moab, the Jordan valley, and Palestine (which have undergone but little alteration within the past three or four thousand years) were essentially different from those required by the narrative in the books of Exodus, Numbers, Deuteronomy, and Joshua, we should have grave cause to doubt the authenticity and truth of the events recorded. These physical features remain standing monuments to the truth or falsehood of the Biblical narrative. So the question may be asked under which aspect are they to be regarded? Well, I might summon a number of witnesses who are able to record from their own observation the fact that the physical features, and often the very names attached to them—translated from the Hebrew into the Arabic—accord remarkably with the narrative; so that, standing on the spots with our Bibles in our hands, we can picture to ourselves the successive events as recorded in the sacred books. I have only to mention the names of such travellers as the late Dean Stanley; of Professor Palmer, who in his *Desert of the Exodus*, has succeeded in identifying almost every spot where important events occurred in connection with the Israelitish emigration; of Burckhardt; of Sir Charles Wilson and the officers of the

Ordnance Survey of Sinai, who with great detail have shown that Jebel Musâ, or Moses Mount, in the centre of the Sinaitic Peninsula, fulfils in all its characteristics the conditions of the narrative of the giving of the Law; and that Jebel Haroun (Mount Hor), rising conspicuously above the numerous ridges and prominences which bound the great valley of the Arabah on the eastern side in the vicinity of Petra fulfils the requirements connected with that portion of the narrative recording the events of Aaron's death, and the resumption of the journeyings after the lapse of forty years. Having myself had the opportunity of corroborating, from personal observation, many of these identifications, and comparing the narrative with the features of the ground which are indispensable to right understanding thereof, I am much tempted to linger amongst these interesting spots, but as time does not permit I must do so no longer; and I pass on from these general topics to others of a more special kind, and I shall select five cases which seem to me of special interest in this connection, namely:—1. The inscriptions on the Temple of Karnak; 2. Tel-el-Hesi and Tel-el-Amarna; 3. The Moabite Stone; 4. The Siloam Inscription; 5. The Holy Rock under the dome of the Mosque of Omar.

Some of these cases have already been brought before the members of this Institute by Professors Sayce, Maspero and others. On this account I have not thought it necessary to do more than give a summary of the results necessary to the argument in question. Others are to be found recorded with more or less fulness in the pages of the *Quarterly Statement of the Palestine Exploration Fund;* a publication which like our own *Journal of Transactions*, contains a vast amount of information on Biblical Archæology and kindred subjects, and will prove of great value for reference in time to come.

1. *The inscriptions on the Temple at Karnak* by Sheshonk I, who appears to be the Shishak of Scripture (1 Kings xiv, 25; 2 Chronicles xii), giving a list of the fenced cities of Judah over which he had established his supremacy in the time of Rehoboam, have been investigated by Champollion, Brugsch, Blau, and others. The most recent attempts at deciphering the hieroglyphic character are those of Professor Maspero (*Journal of* VICTORIA INSTITUTE, May, 1893), who to some extent supplements the results of Brugsch's investigations (*Geschichte Ægypteus*, p. 666), and by transcribing the Egyptian letters rigorously into Hebrew has recovered the names of a large number of cities and towns recorded in

the Bible. Some of these still exist, and are known by the Arabic renderings of the original Hebrew.* Of the total number of one hundred and thirty-three names recorded at Karnak—some twenty-eight or twenty-nine can be identified with the utmost certainty as occurring in the Bible—chiefly in the books of Joshua, Judges, and Chronicles i and ii. The account of Shishak's invasion is given twice over in the Bible; first, in the book of 1 Kings xiv, 25; again, at greater length in the book of 2 Chronicles xii. In this latter book we read that the King of Egypt invaded Southern Palestine, captured Jerusalem, and all the fenced cities which pertained to Judah, and returned into Egypt carrying away with him the treasures of the King's house, and the shields of gold which Solomon had made. On his return into Egypt, he had the names of these conquests inscribed on the great temple of Karnak at Thebes, which have now been deciphered and identified with those of the books of the Old Testament, and connected with events therein recorded. The invasion of Palestine by Shishak took place about 972 B.C., and the inscription a little later. Thus these identifications come down to us through a period of nearly 3,000 years. They confirm the account of this historical event as given in the books referred to; and the special interest of the confirmation lies in the fact that it comes through an Egyptian source, rather than through one connected directly with the Holy Land. Amongst the names on the temple of Karnak we find those of Gaza, Megiddo, Shunem (Shaunama), Mahanaim (Mahanema), Beth-horon (Bit-haouroan), Ajalon (Aiaouloun), Shocho (Shaouka), and Berachah (Baruk).†

2. *Tel-el-Hesi and Tel-el-Amarna.* I now come to another discovery, this time in Southern Palestine, tending to throw light on Old Testament history; namely, Tel-el-Hessi—a mound in Southern Palestine on the borders of Philistia, taken in connection with another excavation in Tel-el-Amarna (or Tel Berri Amran, according to Mr. Bliss) near the banks of the Nile in Upper Egypt.

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* There are much older inscriptions at Karnak belonging to the reign of Tothmes III (about B.C 1650). See Prof. Maspero *On the names of the list of Tothmes III, which may be assigned to Judæa. Journ. Vic. Inst.* Vol. xxii (1889).

† See Notes by Colonel Conder, *Quarterly Statement, P.E.F.*, July 1893, p. 245. (Colonel Conder, R.E., has added some observations to M. Maspero's Paper, generally confirmatory of his identification.)

It will be recollected that five cities of the Amorites under their respective kings joined in an attack upon the Gibeonites for having made a treaty of peace with the children of Israel under Joshua (Josh. x, 3–5). This was about the year B.C. 1451. One of these cities was Lachish under its king Japhia, and of this city no trace remains at this day even in name. Of the five cities of the Amorites mentioned, only Jerusalem and Hebron could be identified down to the time of the excavations at Tel-el-Hesi, which by a remarkable coincidence has been determined with the utmost probability to be Lachish; thus completing the identification of three out of the five Amorite towns, and it comes about in this way:—

Amongst the remarkable series of tablets with inscriptions in the cuneiform characters of Assyria, discovered at Tel-el-Amarna, near Assiout, in Egypt, amounting altogether to two hundred and forty in number, there is one addressed from a certain Zimridi, the Governor of Lachish, to Amenophis IV, otherwise known as Khuenaten, who introduced the worship of the solar disc (Rawlinson, *Sketch of Universal History*, Vol. i, p. 40, 1887). This was about the year 1400 B.C. Very recently, in 1888-9, excavations were undertaken by Prof. Flinders Petrie, and afterwards by Mr. Bliss at Tel-el-Hesi, in Southern Palestine, which had been conjectured by Professor Sayce and others to be the possible site of Lachish. As the excavations proceeded it became more and more probable that the conjecture was correct. Under a great mass of rubbish of more recent date the workmen came upon some Egyptian beads, scarabs, and Babylonian seal-cylinders. On one of the beads was the name of Queen Tere (or Taia). This queen must have been very beautiful to judge from her portrait discovered by Mariette at Karnak.* She was the mother of Amenophis IV, to whom most of the Tel-el-Amarna correspondence is addressed. But of all these objects the most interesting and important was that made at the very end of the operations. This consisted of an earthenware tablet inscribed with characters which, according to Professor Sayce, are identical in style with the Tel-el-Amarna tablets, and containing a letter addressed to Zimridi; so that we have here, in fact, part of the correspondence between the mother of Amenophis IV, on the one hand, and Zimridi, the Governor of Lachish, on the other, carried on in Babylonian characters, and thus

* See Perrett and Chipier's *History of Ancient Egyptian Art*, p. 242.

identifying the mounds as covering the site of the ancient Amorite city.* The Tel-el-Amarna tablets have been translated by Colonel Conder, R.E. The letters, numbering one hundred and seventy-six, are from Palestine and Syria, were written about 1480 B.C. by Amorites, Phœnicians, Philistines, and others to the King of Egypt, to generals and officials; and contain the names of contemporaries of Joshua mentioned in the Bible; the translation is published by the Committee of the Palestine Exploration Fund, 1893.†

The discovery of this correspondence enables us to infer that at and before the period referred to (between 1500 and 1700 B.C.) there existed schools in which the Babylonian literature was taught, and that documents were preserved in tablets in the cuneiform character, a great improvement for all literary purposes on the ancient Egyptian hieroglyphics. This style of character was probably introduced into Egypt by the Hyksos conquerors about 2200 B.C., and it is of the greatest importance for us to know that it was employed in Egypt and the adjoining countries, because we can now explain what has been denied by some of the critics:—how the early books of the Bible were written at the period to which they refer, and are not, as has been contended, compilations of later date. In the words of Professor Sayce, "The Tel-el-Amarna tablets have overthrown the primary foundation on which much of the criticism of writers like Stade was built."‡

3. *The Moabite Stone.* While Egypt and Southern Palestine have, as shown in the preceding cases, yielded monuments illustrative of the veracity of the Scriptural narrative, another, in some respects more remarkable than either of the preceding cases, has within the last few years been recovered from

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* "Many of the letters written in Babylonian from Syria contain words and grammatical forms closely related, in some important details, to the Hebrew of the Old Testament."—*Quarterly Review*, April, 1893, p. 348.

† Colonel C. R. Conder, *The Tell Amarna Tablets*, published by the P.E.F. (1893).

‡ Accounts, with plans and drawings, of the excavations at Tel-el-Hesi will be found in the *Quarterly Statement of the Palestine Exploration Fund*, 1892–93; also Professor Sayce, *Records of the Past*, new series, Vols. ii, iii, iv, and v; Ludwig Abel, *Der Thontafelfund von el Amarna*, Berlin, 1889–90. Some of the Amarna tablets are in the Berlin Museum, some in the British Museum, and some in Paris. Those in the British Museum have been deciphered by Dr. Budge and Dr. Bezold.

amongst the ruins of Dhiban, one of those vanished cities whose remains strew the lofty plains of Moab beyond the Jordan—now the camping ground of the Bedawîn Arab. This monument consists of a slab or block of basalt, about three and a half feet long by two feet in breadth and thickness, bearing on one side an inscription in Phœnician characters, which tells its own tale regarding its origin and object. The account of the discovery and ultimate rescue of this unique monument is much too long to be inserted here; but of the many accounts which have been published perhaps the most complete and graphic is that of Dr. Pakenham Walsh, Bishop of Ossory.* It is an interesting fact that the honour of first bringing this stone to the knowledge of the outer world belongs to a Christian missionary, the Rev. F. Augustus Klein, one of the Church Missionary Society's labourers in the East. The language is almost identical with the ancient Hebrew, and shows that at the period to which it belongs, namely, the tenth century before Christ, the Israelites and the Moabites had a common language, as being sprung from the same ancestry, though there is considerable dissimilarity between the characters in which this language was inscribed by the two nations, as was to be expected owing to their long separation and isolation from each other. Still they bear an essential relationship which may be recognised, first in the number of the letters of the alphabet, which is twenty-two in both cases. (In the Moabite inscription one of the letters (Teth) is missing owing to the mutilation of the tablet; but it must have been used in the "A(t)aroth.") Second, in the similarity of many of the letters themselves. Till the discovery of the Moabite Stone the oldest alphabetic document of any length with which we were acquainted was the inscription on the sarcophagus of Eshmunazar, which dates back about 600 B.C. But the Moabite Inscription carries us back by over 300 years to an earlier period, and so we have in it the most archaic form of the Phœnician alphabet.

So far for the language and alphabet. We must now con-

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* *The Moabite Stone*, 2nd Ed., 1872; also Tristram, *Land of Moab*, p. 134. A photograph of the stone and inscription is published by the Committee of the Palestine Exploration Fund. The alphabets of the Phœnician inscription, as contained in the Moabite Stone and the Siloam Tablet, will be found in *Helps to the Study of the Bible*, published by the Oxford University Press, Ed. 1893, Plate I.

sider the object and purport of the inscription. This, as I have already observed, can be clearly gathered from the contents. The tablet tells its own tale. It is, in fact, an historical monument erected by Mesha, King of Moab, recounting his wars with Omri, King of Israel; the capture of Ataroth, a city of the Gaddites, the slaughter of the men, the reservation of the women, and the carrying away of the vessels used in the worship of Jehovah (Yahveh) as an offering to Chemosh. Many more of Mesha's exploits are recorded, and numerous names of places which he built or destroyed. But what we are here chiefly concerned with is the testimony the inscription bears to the historical accuracy of the Books of the Kings (1 Kings xvi. 21; 2 Kings iii, 4). For it fills up a gap in the brief account we have in these books regarding the reign of King Omri. The Moabites had been reduced to subjection by David, but after the separation of the kingdoms, probably regained their independence. During the reigns of Jeroboam and Ahab they were again tributaries; but after the death of Ahab Mesha rebelled against the King of Israel, as we learn from 2 Kings iii, 4. This successful insurrection thus referred to in the Biblical history, is recorded by Mesha himself on the Moabite Stone, and his victory is ascribed to Chemosh, called in the Bible the God of Moab, as we read, "Woe to thee, Moab! thou art undone, O people of Chemosh" (Numb. xxi, 29); and again, "Chemosh, the abomination of Moab" (1 Kings xi, 7).

How remarkably confirmatory of all we read in the books of the Old Testament regarding this period of Israelitish history is all this! We have here recorded names of persons, places and events, which we find in the Books of Kings and Chronicles, together with others which are supplementary. Jehovah is recognised as the God of Israel; Chemosh is worshipped as the god of Moab, to whom Mesha is indebted for his victories. We find the names of Dibon, Nebo, Baal-Meon, Ataroth, Kiriathain, Aroer, the river Arnon and Horonaim, which last is referred to in the Book of Isaiah as connected with the destruction of Moab (Isa. xv, 5); but which was captured by Mesha from the Edomites, as we learn from the inscription.

Thus the Moabite Stone is amongst the latest of those monuments which modern research has brought to light in this age of hypercriticism to bear testimony to the veracity of the Bible record.

4. *The Siloam Inscription.* During the excavations carried

on by the officers of the Royal Engineers, under the auspices of the Palestine Exploration Fund, for the purpose of determining the form and position of the ancient foundations of Jerusalem beneath the accumulated rubbish of centuries by which they are concealed from view, a remarkable inscription was met with in an ancient aqueduct near to the Pool of Siloam in the year 1880; this is now known as "The Siloam Inscription." The inscription is in Phœnician characters on a tablet of stone, and describes how that the workmen engaged in hewing out the conduit from opposite directions, approached so near that the sound of their pickaxes and their voices became audible through the intervening partition; and that ultimately this partition of solid rock was hewn away so that the waters flowed through into the covered reservoirs prepared for them; there being a cubit between the roof of the conduit and the surface of the waters. The inscription is very nearly perfect, and has been reproduced in a photograph from a squeeze by the Committee of the Palestine Exploration Fund.

When we come to inquire whether there is any reference to the making of this conduit in the Bible, we are not long left in doubt. We read in the books of 2 Kings xx, 20, and 2 Chronicles xxxii, 30, how that Hezekiah on the approach of the army of the King of Assyria, impounded the waters coming down from the upper springs of Gihon, and covering them over with masonry so as to conceal them from the Assyrians, carried them by a conduit into a pool within the city "to the west side of the City of David." The work was one considered of great importance, as we gather from the fact that the account of it is thrice referred to, and were it not that an erroneous opinion has gained considerable ground regarding the true position of the "upper spring of Gihon," no doubt could be entertained that this is the very conduit constructed by Hezekiah. The identification has now happily been established by Colonel Sir Charles Warren and Colonel Conder, who explored the conduit from end to end, and have given an account of the somewhat perilous undertaking, which is exceedingly graphic and interesting (*Survey of Western Palestine*, part II, page 346, 1886; also the *Recovery of Jerusalem*, page 257). It was also explored by Dr. Robinson in 1838, and is referred to by Quaresimus in 1625. It has a length of about 1,760 feet, or 1,200 cubits of 16½ inches each. The waters of the spring are intermittent, as mentioned by the Bordeaux Pilgrim and Jerome in the fourth century; and the

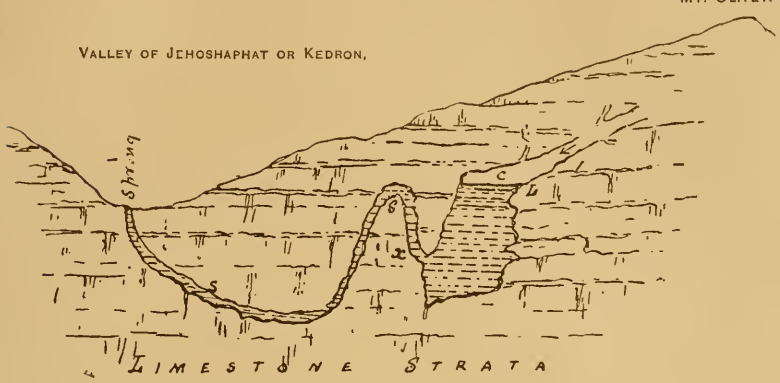
intermittent character, which is difficult to account for, remains to the present day, as illustrated by the fact that while Warren and Conder were groping their way up the conduit in 1880, the water suddenly rose and so nearly filled the conduit that the lives of the explorers were for some moments in jeopardy.

As regards the characters of the inscription, the internal evidence of their approximate date is complete; they are clearly Phœnician or ancient Hebrew, most of the letters being similar to those of the Moabite Stone which, as we have already seen, belong to the Phœnician group of highly archaic forms. In the opinion of Professor Sayce, the letters of the Siloam tablet belong to a period lying between the eighth and sixth centuries B.C., the period within which the reign of Hezekiah is included, and the letters correspond to those on Jewish coins of this epoch. The evidence, therefore, regarding the date from the character of the inscription itself appears quite conclusive.

But the evidence derived from a consideration of the topographical position of the conduit appears at first sight less satisfactory. The idea is prevalent that the upper and lower pools of Gihon are those to be found in the Valley of Hinnom, which descends along the base of the western walls of the city; and if this be the case, then the view of the officers of the Ordnance Survey falls to the ground. So general is this idea that I find in the excellent map of ancient Jerusalem prepared by Messrs. W. and A. K. Johnston, in the *New Biblical Atlas* (Pub. by the Religious Tract Society), that the pools of Gihon are placed in this valley, the upper near its head; the lower, about half way down where the well-known artificial pool has been constructed. Now the name "Gihon" as I learn from Colonel Conder, signifies the "spring" or "bursting forth of water," a term which would be applicable to the "Fountain of the Virgin," but certainly not to the upper reservoir in the Valley of Hinnom, which has no spring at all, and only receives the waters which collect from surface drainage; the date of its construction is uncertain, but Conder doubts if it is older than Pilate's aqueduct. The "Lower pool of Gihon" is known to have been constructed by the German knights late in the twelfth century, so that it is out of court at once! As a matter of fact the "Fountain of the Virgin" ('Ain Umm ed Deraj) is the only strong natural spring about Jerusalem; and it was a matter of policy that Hezekiah should endeavour to deprive the army of the

Assyrians of this supply; "for why, said he, should the Assyrians come and find much water?"

IDEAL SECTION TO EXPLAIN THE ORIGIN OF THE INTERMITTENT SPRING OF THE VIRGIN'S FOUNTAIN.



c. SUPPOSED UNDERGROUND CAVERN.
s. SYPHON-LIKE FISSURE, FILLED WITH WATER.
l. LEVEL OF WATER IN CAVERN WHEN SPRING BEGINS TO FLOW.
x. LEVEL OF WATER WHEN SPRING CEASES TO FLOW.

One more point still remains to be investigated, namely, the statement in 2 Chron. xxxii, 30, that the upper water-course of Gihon was "brought straight down to the west side of the City of David." The pool of Siloam is situated at the entrance of the Tyropœan Valley at the southern extremity of the City of David. But as Major Conder, supported by Dr. Davidson, the Professor of Hebrew at Edinburgh, contends, the passage may be quite correctly translated "westwards towards the City of David." If this be accepted the apparent discrepancy disappears, and thus the evidence, derived from the characters of the inscription on the tablet within the conduit, as also the topographical details, are all brought into harmony with the Biblical account as given in the books of King and Chronicles; and the identification of the conduit with that of Hezekiah is established.*

* As regards the cause of the intermittent character of the spring much uncertainty must exist. I have consulted Gen. Sir Charles Wilson and Mr. George Armstrong, Secretary of the P.E.F., on the subject, and they both concur in the view that it is due to a syphon-like structure in the underground natural fissure or duct through which the water passes to the spring. This seems to me a very probable supposition; indeed, the only one in a district which is not volcanic.

5. *The rock under the dome of the "Mosque of Omar."* My last illustration will be taken from the Holy City—as it once was—and from an object which possesses an interest second to none amongst all the objects of immemorial interest in Palestine.

Some years ago when visiting Rome, and after wandering for several days amongst the buildings and structures ancient and modern of the once mistress of the world, I came to the conclusion that amongst all these objects there was one which stood out clear and distinct for its unique, historical interest, and as a standing monument to the truth of prophecy; and that was the triumphal arch of Titus. Amongst the objects in modern Jerusalem, that which occupies a similar position when I look back upon the whole scene, is the "Holy Rock" beneath the beauteous dome of the so-called "Mosque of Omar."

Whatever doubt there may be regarding the site of the Crucifixion, whether in the traditional spot near the so-called Church of the Holy Sepulchre, or, as seems more likely, outside the northern wall of the modern city, there can be none regarding the history of this boss of native limestone rock, which rises amidst so much that is of human art. It is the natural summit of Mount Moriah, which, though doubtless somewhat "disfigured by hard treatment and rough chiselling" (as stated by Sir Charles Wilson), yet is, to all intents and purposes, the same which witnessed several remarkable events in Jewish history, dating from its earliest commencement to its close. Let us for a moment glance at these events in the order of their succession.

Abram doubtless caught sight of the summit of Mount Moriah as he journeyed towards the plains of Mamre; but the first recorded event was the intended sacrifice of his son Isaac "on one of the mountains which the Lord would point out to him in the land of Moriah." By this event the mount became ever after hallowed to his descendants; this was about the year 1872 B.C. The distance from the plain of Mamre or Hebron is about twenty-one miles, or two days' journey on foot, thus corresponding to "the third day" (Gen. xxii, 4), on which the top of the mount came into view.

Passing down more than eight hundred years we again recognize this mount as the spot where by the Divine direction David reared an altar to make atonement for his presumption in numbering the people and to avert the plague from Jerusalem. The rock was then the threshing floor of

Araunah the Jebusite, one of those Canaanites who maintained their possessions after the conquest, but who acknowledged the sovereignty of the kings of Israel. It was natural and fitting that a spot previously consecrated by Abraham's sacrifice should be chosen for this purpose.*

The next event connected with this rock was the selection of the mount of which it forms a part as the site for Solomon's Temple. The rock, however, was not the site of the Temple itself, but of the brazen altar which stood in front of this structure. Its previous history marked it out for this purpose; it had in fact been consecrated as the altar of sacrifice by the offerings of the Father of the Faithful, and of David, King of Israel. What more fitting site could have been selected? Amongst all the places of historical interest in Palestine there is none more certain of identification or of more hallowed interest.

And now a few words regarding the rock itself. It rises beneath the beautiful dome of the Mosque about 6¼ feet above the tesselated floor. Its length is 43 feet. and width 8 feet. Along the west side runs a platform—cut out along the natural scarp of the limestone rock—which dips in the opposite direction, the surface corresponding to the plane of stratification. We read that Solomon's altar of brass was 20 cubits long, 20 cubits broad, and 10 cubits high above the ground, so that the floor of the Mosque conceals the base upon which the brazen altar rested. At a distance of about 20 cubits to the west of the altar rose the grand porch of the Holy Place, approached by a flight of steps; in an opposite direction were the pillars of the Levites' court, the men's court communicating by means of the Nicanor Gate with the court of the women, while the whole of this inner structure was surrounded on four sides by the grand colonnade of three groups of columns, enclosing on the south side the Court of the Gentiles. Such were the uses and such the surroundings of this once bare limestone crest—rising, in the time of Abraham, out of the thickets of scrub and bramble which clothed the sides of Mount Moriah.†

* Under the rock is a cave about 6 feet high, doubtless of human work; and it seems probable that this may have been a granary for the corn which was threshed on the solid rock above.

† Colonel Conder calls in question this identification and regards the rock as having been the site of the Holy of Holies in the temple. But I must adhere to my view on the ground of the eminent suitability from its previous history for the place of the altar, as well as from considerations based on the form and structure of the rock and the cave below it.

The illustrations I have thus somewhat briefly and imperfectly dealt with are far from exhausting those which modern research has disclosed, as testifying to the accuracy of the Biblical record of Old Testament events, but may, perhaps, suffice to confirm our belief not only in the truth of the statements and the reality of the subjects with which it deals, but also may induce us to hold more firmly the conviction that we may implicitly rely on the historic accuracy of the accounts recorded from the time of the call of Abraham downwards. It is at this momentous epoch, as it seems to me, that the historical, prophetic, and didactic pages of the sacred volume really commence, and succeed to the traditional portions of the early chapters.

The CHAIRMAN (D. HOWARD, Esq., D.L., F.C.S.).—I am sure you will join with me in thanking Professor Hull for the very valuable paper which he has given us. The concurrence of testimony that he has brought together from very recent investigations is yet another link in the chain of evidence which has accumulated in our time of the marvellous historic accuracy of the Old Testament. It is curious to be able to remember, not so long ago, the discussions that took place as to the historic truth of the Old Testament when the only testimony for or against large portions was that of the fragments of Berosus that have come down to us; and now we have these marvellous discoveries of ancient inscriptions which, from one quarter and another, have come to us, and to which, though hidden for thousands of years, we can now turn with deep interest to know what they can tell us. It is most interesting and remarkable, and it is necessary to explain (if we are not to accept the historic accuracy of the Old Testament) how it is that they have confirmed in these little details (which, after all, are the test of the truth of the MSS.) the minute accuracy of the Old Testament. We do not expect the inscriptions of the defeated and the victorious to give the same account; but as they compare the one with the other, they prove to demonstration the truth of the Scripture narrative, and the more one studies them, the greater is the interest that attaches to them. All these little details are like

the water-marks in paper that proves its origin—they are like the little details in writing—all those minute points on which the validity of the title to an estate may turn in the law courts

I am glad to see some here who have specially studied the question, and I hope they will give us the benefit of some remarks.

Professor J. H. Gladstone, D.Sc., F.R.S.—I join with you most heartily, sir, in your thanks to Professor Hull for the way in which he has brought these matters before us, and for the very interesting points that he has united in one focus, so as to illustrate more fully the general historic accuracy of the sacred writings of the Old Testament. I have not myself to add anything to those particular instances which he has brought forward as to places and buildings. There is one point, however, on which I have worked a little, and perhaps you will allow me to add that to the five points which Professor Hull has dealt with. It is the metals that were used in ancient times.

I was first led by Professor Flinders Petrie to take up the matter of the metals of Egypt, and, later on, those of Assyria; but, just recently, through the kindness of Mr. Bliss, I have been able to examine those of Tel-el-Hesi. I do not know the arguments that will be brought forward against its being La hish, but if it is not Lachish, it is probably a similar place. At any rate, it is, apparently, a series of towns, one above the other, forming a great mound. There are remains of several ancient Amorite towns at the bottom. Then you come to a level where there is little else than sand and ashes, and above that there is an Israelitish town or towns. This agrees at any rate very well indeed with the general history we have of Lachish in the Bible. I asked Mr. Bliss for specimens of the metals he had obtained, and he gave me some from the bottom to the top. The lower portion contains the metal which you will find almost always in ancient civilization, viz., copper. Above that there was found to be bronze, that is, copper alloyed with tin, and bronze continued from near the bottom of the mound up to the top, but as you rise to the upper part of the Amorite city, that is, towards the region of the Israelitish city, the bronze thins out and its place is taken by iron, so that iron tools appear almost exclusively in the upper part of the mound, and they are very numerous. The lowest part contains copper tools, as I said; but the copper has been hardened,

so that it is good as a cutting material, which copper really is not. There is very little doubt that they had the means, in some way or other, of hardening copper, and it is a matter of speculation amongst many of us as to what those means of hardening copper were.* I believe there were more than one method. They did not always use hard copper, because the last I examined from Chaldea was soft. That was very ancient, and pure copper. This has a bearing on the metal spoken of in Scripture. We often read of bronze under the name of brass, and this word is constantly employed in the Old Testament. It was the metal *par excellence* of those days. They made almost everything of it, cutting implements, fetters, chains, ornaments and other things which one would not expect to find made of bronze; for instance we read of gates of bronze in the ancient cities, and there is one particular expression in the 18th Psalm, v. 34, where David says, "So that mine arms do bend a bow of steel." It occurs also in the book of Job (20th Chap. v. 2). In both places it is translated in the Authorised Version as a "bow of steel." The word is "brass" or bronze, and it is put so in the Revised Version. (See Calmet and others.) It required great strength, no doubt, even to bend this bow of bronze. As to the matter of gates of bronze, I have put in my pocket, thinking it possible I might have the opportunity of showing it to somebody here (probably you have seen it before) a portion of the gates of Shalmaneser's Palace. This is Assyrian, of course; but it is connected with the history of the Israelites; for we know that Jehu sent tribute to Shalmaneser, and probably his messengers passed between those doors of which this is a portion of the bronze. (Producing the specimens.) It is not that they were made of solid bronze.

Mr. HORMUZD RASSAM.—They were of timber.

Dr. GLADSTONE.—They were gates of timber covered with bands and bolts of bronze. The language of Scripture, therefore, is correct in reference to this large use of bronze. But let me go a little further and refer to iron. Iron does not appear to have been used except in comparatively late periods. It was used, no doubt, more or less, during most of the time when the Jews were

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* It is reported that the process has been re-discovered in America.—ED.

settled in the Holy Land. As regards the arguments which some critics in these days have urged with respect to the authorship of these earlier books of the Bible, the evidence goes to show that whether they were written after the return from Babylon, or just before it, or 500 years previously, they do contain or quote from old documents. The ancient facts are there. The question, with those who are interested in this "higher criticism," is as to the structure of the books and as to the period and the way in which they were built up. If they were written long after the events, the writers would be sure to put in a great deal that is true out of the ancient documents, but they would be very likely to put in some erroneous thing too. Now it is curious that in the book of Exodus you do not meet with the mention of iron, whereas it speaks constantly of bronze; and in the later books of the Jews you find bronze and iron talked of very freely indeed; and I think that throws some light on the antiquity of the documents.*

Perhaps I might mention that amongst the metals found at Tell-el-Hesi there are lead and silver, metals often mentioned in Old Testament books. The lead is exceedingly pure: the silver appears to be ornamental, the bangle of a child perhaps, but there is a good deal of copper in it and of gold also.

There is one other point to which I will refer, and that is that flint knives are spoken of in the Bible, and of course swords are spoken of at various times. We know there were bronze swords antecedent to the period of Abraham, and certainly flint implements. That is also evident from Tel-el-Hesi. The flint knives there are exceedingly numerous, and occur from the bottom right up to the top of the mound of Tel-el-Hesi. They are of various sizes, and the art seems to have been maintained for various purposes long after bronze and iron were in common use.†

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* The late Rev. F. W. Holland, M.A., referred to the use of flint knives being common to this day in Egypt. (*Transactions*, Vol. xiv., p. 1.)—Ed.

† Professor Flinders Petrie, D.C.L., remarks, March, 1896:—"The whole evidence of actual remains in Egypt is entirely against any iron having been there till 700 B.C." Up to the present, investigation would seem to show that iron is not mentioned in any *ancient* Egyptian inscription; and, so far as one can judge, it came into Egypt from countries to the north-east, in which research has proved that it was known in much earlier times.—Ed.

Mr. HORMUZD RASSAM.—There are a few points I should like to deal with in regard to some matters that have been referred to. I was the only fortunate Assyrian and Babylonian explorer who discovered any metal. I first discovered brass in the form of one of the leaves of the gates of Babylon; the one which is now at the British Museum is copper. As to the remainder, everything was copper. I found, also, a piece of gold. There was certainly silver in Babylonia and also iron.

Dr. GLADSTONE.—The iron must have been introduced at a comparatively late period.

Mr. HORMUZD RASSAM.—I also found a good many implements of metal both in Babylon and in Assyria.

Mr. JOSEPH OFFORD, Junr., B.A.—The interesting paper we have just heard from Professor Hull touches upon several subjects upon which, with your kind permission, I will add a few remarks. First, with regard to inscriptions in the Phœnician characters such as the "Moabite stone."* An important early paleographical specimen of that script, has been made known by the discovery of the inscriptions of Panammu I. and Bar Rekeb at Zenjîrlî.† This site, which has been excavated by the Germans, is situated near the Gulf of Antioch, and the mound covers the remains of a palace in which was found a long inscription of Esar-haddon referring to his conquest of Egypt. It also contains the two famous Aramaic monuments of Semitic Kings who ruled there, not only before Esar-haddon; but, in the case of one of them, before the time of Tiglath Pileser. These inscriptions have been translated by MM. Sachau, Halévy, and Müller; and one very remarkable fact derived from them, appertaining to the history of the Old Testament Scriptures, is the proof they afford of the correctness of the view of many Semitic and Biblical scholars, that the doctrine of a future life was a matter of common knowledge to the early Semitic people: for the contents of the Zenjîrlî Aramaic texts leaves no doubt whatever of the belief being a matter of faith there. Speaking of another Phœnician inscription, that of Eshmunazar, I note that Professor Hull assigns it the date of 600 B.C. Some ten years ago M. Cler-

* 890 B.C. (*Sachau*).—ED.

† Of circa 790 B.C. and 730 B.C. respectively (*Sachau*).—ED.

mont Ganneau offered reasons for placing Eshmunazar at a later period, about 400 B.C., contemporary with the Ptolemies; and the discovery of another inscription, that of Eshmunazar's son Tabnith, has lent support to M. Clermont Ganneau's views. This text of Tabnith's was found upon his tomb at the same time as the marvellous recovery of the splendid carved sarcophagi at Sidon which now form the chief glory of the Constantinople museum. An interesting fact is derived from this find in regard to the origin of the so-called anthropoid sarcophagi so common in Sardinia and all over the Phœnician world. The inscription of Tabnith, like that of Eshmunazar, is graven upon a granite sarcophagus, not only, apparently, of Egyptian workmanship, but positively so, for it still bears, unerased, the hieroglyphic text of an Egyptian general, of one of the middle dynasties, for whom it was originally made. It is evident that there was at one time, in the era of Greek dominion on the Nile, a large export trade in these valuable sarcophagi, which were purchased for the purpose of providing the coffins of wealthy Phœnician princes, and it was when local manufacturers copied these for a poorer class of burials that the anthropoid shape became the vogue.

The progress of discovery in Egypt is still rapid, and only lately an inscription has been found throwing quite an unexpected light upon a chapter of that Bible of Ancient Egypt, the so-called *Book of the Dead*, which had hitherto been inexplicable. Early in 1892 a splendid tomb was opened at Assouan, in honour of the visit of the Princess of Sweden, and its inscriptions have been published by Professor Schiaparelli of Florence. It is of exceedingly early date, being the grave of one Hirkhouf, who was born in the time of Pepi I. of the sixth dynasty. In his autobiography, Hirkhouf takes great credit to himself for having successfully brought to the Pharaoh, a sort of dwarf or ape* from the Soudan, celebrated for his power of dancing, who was called a Danga. It appears from M. Maspero's researches that a Danga had been brought to the court upon a previous occasion, and this sort of dancer seems to have been an object whose possession was greatly desired by the Pharaohs. Hirkhouf took special precautions by means of sentries day and night to pre-

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* Professor Flinders Petrie considers this was a dwarf, *a Danga*.—Ed.

vent his Danga escaping from the Nile ship, and appears as proud of his bringing him safe and sound to the King as other Egyptian functionaries were of the safe conduct of a mighty obelisk from its quarry to a Temple.

Turning now to Babylonian excavations, the Americans, French and Germans have been more successful lately in obtaining literary records than ever before, the American explorations in and around Niffer, having found many thousands of tablets, and these have been so scientifically excavated, the strata in which they were found registered, and each tablet catalogued and so well arranged, and presenting such a continuous series of many centuries, that it may at length be said that the history of cuneiform paleography can now be written.

In reference to Babylonia and the remark of Mr. Rassam upon the metals found there, it may be mentioned that a tablet of antimony was brought home by a French explorer, and I believe some pure carbonate of magnesia has also been found among Assyrian relics.

Rev. R. C. W. RABAN, M.A.—There is one point in Professor Hull's most interesting paper to which I should like to direct attention, *i.e.*, the question whether Abraham's intended sacrifice of Isaac took place on Mount Moriah. I cannot, unfortunately, speak as the Professor and others can, from topographical knowledge of the Holy Land; but I have studied the matter carefully, and there appear to me to be two difficulties in the way of Professor Hull's acceptance of the site afterwards chosen for Solomon's Temple. One difficulty is that mentioned by Dean Stanley, that Moriah does not rise prominently from "the mountains round about Jerusalem," so as to agree with Genesis xxii., 4, "On the third day Abraham lifted up his eyes and saw the place afar off," compared with verse 2, "One of the mountains which I will tell thee of."* The other difficulty is that the oldest interpreters have not identified them. The lxx. render both Moreh and Moriah (Gen. xii., xxii.) by "upland," and 2 Chron. iii., 1, they render Moriah by Ammoriah. The Samaritan gives for Moriah (Gen. xxii.) *terra visionis*, which is confirmed by Aquila and Symmachus. The Targum of Onkelos on Gen. xxii. renders the land Moriah "the land of worship."

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* Dean Stanley's view has been questioned by some.—ED.

The Author.—I must offer you my ardent apology for venturing to undertake to address you on such a subject as I have done this evening, because I quite feel how limited my knowledge of it is. I have not gone very deeply into the history of Bibliology of these matters. I have taken them very much as they occurred to myself, after my visit to the Holy Land, and from subsequent reading in the books and pamphlets to which I have given references.

I quite admit, with the last speaker, that possibly this identification of the summit of Mount Moriah may be illusory. At the same time, I think there is a great deal to be said in its favour. Let me mention one circumstance. The only high road which Abraham could have taken in journeying south, after crossing the Jordan, in order to reach Mamre (or Hebron) must have passed close to Mount Moriah; because, as I am sure Mr. Raban is well aware, there was only one high road along the table land of Palestine at that period, and, indeed, down to the present day, and that is the road which runs along the centre of the ridge, towards which the valleys coming up from the Jordan on one side and the Mediterranean coast-line on the other, converge, leaving a highway from north to south or south to north,—and passing by Mount Moriah and the City of Jerusalem. Therefore, this Mount Moriah would be, naturally, the road along which Abraham would have come, and it is the road by which he would have returned, I should say, towards the mount where the sacrifice was to be offered. I think this point seems to weigh very much in favour of the view I have taken.

I listened with great interest to the statements Mr. Offord has made, and it occurred to me could this Danga he refers to have been one of those dwarfs which Stanley, in his last journey through the great forest of the Congo, came across? There is a tribe of dwarfs, I believe, referred to in ancient Egyptian history.

Then I am sure we heard with great pleasure Dr. Gladstone's account of the materials of these mounds. He has stated, amongst other things, that flint knives were to be found, amongst all the other materials, from the base of Tell-el-Hesy up to the summit. This we might have expected, inasmuch as beds of flint are extremely common amongst the Cretaceous and Eocene limestones of Palestine; and flint would, therefore, naturally be used for such purposes, even when metals were brought into use for more important work.

The CHAIRMAN.—I might mention that there is a curious intermittent spring in Settle, in Yorkshire. With regard to flint knives, it is very curious how, almost all over the world, they are used for sacrifices and occasionally in surgery. I have a strong suspicion that the latter use of them is because they are antiseptic as compared with a dirty bronze knife.

The meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

By Colonel C. R. CONDER, R.E., D.C.L., LL.D.

I am in sympathy with Dr. Hull's paper, and much interested in what he says. He will perhaps forgive one or two remarks on points to which I have devoted attention for many years.

The Karnak lists have now been studied for thirty years. That by Shishak is very short as compared with the lists of Thothmes III., which include the names of 350 towns. A large proportion of these are known, and I have recently found 30 more to add to the 66 which I had previously fixed. The latter were in Palestine, the 30 new ones are in Syria (see volume on the Tell Amarna letters).

I hardly think the presence of Queen *Taia's* name shows that she wrote to Zimridi. Her name has been found also on scarabs at Mycenæ, and in Rhodes. The discovery, however, agrees with the fact that the Tel el Hesi tablet is in the same characters used by other inhabitants of Philistia in the fifteenth century B.C. The Tell Amarna tablets themselves show that the Egyptians used their own hieratic characters, and their own language, at this time, dockets having been written in ink on the tablets, when they arrived. They only used cuneiform letters and clay tablets in writing to Asiatics.

The date of the accession of Thothmes III. in 1600 B.C., is fixed by three separate astronomical calculations, and Egyptian chronology thus agrees with the independent dates of Assyria and Babylonia, derived from Canons of Kings, and from statements as to contemporaries. The new tablets agree with the results formerly obtained.

The Hyksos are called the *Men* in Egyptian records, and came, we are told, from Assyria. This points to their being of the same race with the Hittites, and with the Minyans of Matiene, whose King Dusratta wrote nine long letters to Amenophis III. and Amenophis IV. One of these is in a Mongol language, which appears to be the same used by a Hittite prince writing to Egypt. These three races all adored the same deity Set.

The German work on the Tell Amarna tablets contains no translations. The British Museum volume contains only abstracts of the supposed meanings. The theory which I put forward that the Hebrews are mentioned, as conquering Ajalon Lachish Ascalon, &c., in these tablets, has been independently proposed by Dr. Zimmem in Germany, of which I was not aware when I proposed it in 1891.

As regards contemporaries of Joshua, there is I think no doubt that Japhia is noticed. The Bible speaks of him as King of Lachish, the tablets as King of Gezer. He may have been both. The name of Jabin at Hazor is damaged, but seems fairly certain. The name of Achnizedek at Jerusalem is a personal view, which is not accepted by others, but for which I have given my reasons.

The language of the tablets, no doubt, recalls Hebrew, just as Arabic does ; but the *Quarterly Review* is wrong in regarding the grammatical forms as Hebrew. The grammar and vocabulary alike are Aramean, and almost indistinguishable from Assyrian.

It is also incorrect to speak of the language of the Moabite stone as almost identical with Hebrew. It is remarkable that this is not the case. The plural, the voices of the verb, and other important differences, class the Moabite language as Aramean rather than Hebrew. I speak after long study of this important text. The absence of the letter *Teth* is not due to mutilation of the tablet. This letter is also absent from the Siloam tablet; and, from its early forms, it appears not to have been an original letter, but one probably added later to the Phœnician alphabet. The character used on the Siloam text is unlike that of any other known text. It is the peculiar alphabet of Israel ; and not strictly Phœnician, though of the same class. It differs from that of the Moabite stone, which is more like the Phœnician.

Sir Charles Warren surveyed the Siloam tunnel in 1869. I was not with him. When I was in command of the Survey party, in 1880, I was accompanied twice through the tunnel by Captain Mantell, R.E. On one occasion Mr. G. Armstrong was with us.

The Ordnance Survey calls the Western Pools "Pools of Gihon," because that was their traditional name from the twelfth century down to 1879, when I raised the question, and pointed out that the lower Pool was made by the Teutonic knights in the twelfth century, and was then called the "New Pool."

The syphon of the Virgin's Pool is not the only one in Syria. The Sabbatic River and the great lake on Hermon owe their intermittent flow to the same natural cause, which has long been indicated by various writers.

I am sorry that the term "Mosque of Omar" still survives. The Dome of the Rock is not a mosque, and it was built half a century after Omar died. His mosque was a wooden structure which was then pulled down.

I do not know why Dr. Hull thinks that the Holy Rock was the site of the Brazen Altar. In Herod's Temple the altar was a mass of rubble and mortar, standing on the flat floor of the court. In my opinion the Holy of Holies stood on this rock, which is called the "Stone of Foundation" in the Talmud. It is only by such an arrangement that the levels of the Temple Courts can be made to agree with the actual rock levels of the Haram, without supposing enormous foundations of which no trace exists.

In regard to the foregoing, the author replies:—

I am obliged for these remarks; and feel I should apologise for the use of the term "Mosque of Omar," which I shall henceforth discard. I am probably in error in placing the brazen altar on the Holy Rock, and I find that Col. Conder's view that the Holy of Holies stood on the Holy Rock is supported by the elaborate description of the site of the Temple by Lieut.-Col. Watson, R.E., in the *Quarterly Statement* P.E.F., for January, 1896, which every one interested in the subject ought to consult.

ORDINARY MEETING.*

T. CHAPLIN, ESQ., M.D., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

ASSOCIATES :—J. Caleb Jackson, Esq., M.D., United States ; Rev. J. H. Parry, B.A., Burma ; Rev. W. M. Teape, B.A., Durham ; Rev. S. M. Zwemer, M.A., Arabia.

The following paper was then read by the author :—

BUDDHISM, AND "THE LIGHT OF ASIA."†

By the Rev. R. COLLINS, M.A.

IN what sense, and how far, can Buddha be called "the Light of Asia"? In putting the question thus, I am by no means wishing to suggest that I am embarking on an attempt to prove that the teaching of Buddha was all darkness. That certainly is not my conviction : how could it be so in the face of many of the moral tenets that are to be read in the Buddhist books, as, for instance, that "the man who has sinful friends, unwise associates, and frequents the company of those who follow evil practices, will come to destruction, both in this world, and in the next"; that "it is right that children should respect their parents, and perform all kinds of offices for them"; and that they are even "to wash the feet and hands of their parents, thinking how they themselves were washed when they were young." Such are truly moral and noble precepts. But I demur at what manifestly tends to represent Buddha as "the Light of Asia" in regions beyond those to which his influence really belonged. And this is what I think is the tendency of Sir Edwin Arnold's

* 7th of 28th session.

† Discussion completed September, 1895.

beautiful poem, which he has written under that title. A poet is a creator; and no doubt he is at liberty to take any subject, and adorn it, or remodel it, as he wills, for the purposes of his art. The result becomes the creature of his own brain. And what we all most admire, probably, in a poem, is the evidence of the skill and poetical power of the thinker. Sir Edwin Arnold's poetry is admirable in that it is picturesque in a high degree; but I read *The Light of Asia* with this one feeling, that it is no more a picture of the genuine and real Buddha, than Alfred Tennyson's "King Arthur" is a picture of the actual King Arthur, if such King, indeed, ever existed. There is all the difference in the world between a portrait by Millais, and an Andromache by the President of the Royal Academy; between what may be called, in an "Art" sense—realism and idealism.

That Buddha really existed. I fully believe; but that he himself would have been deeply astonished, could he have foreseen the future picture to be drawn of him by the modern poet, I believe also. Sir Edwin Arnold, indeed, admits in his preface, that he has "modified more than one passage in the received narratives"; but yet he speaks of a "just conception" to be gathered from his poem, "of the lofty character of this noble prince (Buddha), and of the general purport of his doctrines"; and many will, no doubt, regard *The Light of Asia* as conveying a correct portrait of the real fundamental facts of Buddha's character and original teaching.

Our poet, for instance, as perhaps he has a right to do as a poet—though certainly not as an expounder of the real nature of a so-called religious system—takes the later legends as to Buddha's nature and work, as best fitted to his poetical dream, and opens his poem by a description of Buddha coming from the sky to be born again among men to "help the world." From the same sources, and from whencesoever there is a picturesque bit to be gleaned, he draws the picture of a human incarnation of a divine Buddha. A somewhat striking description is that of the aged recluse Asita worshipping the new-born infant.

> "O Babe! I worship! Thou art He!
> I see the rosy light, the foot-sole marks,
> The soft curled tendril of the Swastika,
> The sacred primal signs thirty and two,
> The eighty lesser tokens. Thou art Buddh,
> And thou wilt preach the Law and save all flesh
> Who learn the Law, though I shall never hear,
> Dying too soon, who lately longed to die;

Howbeit I have seen thee. Know, O King,
This is that blossom on our human tree
Which opens once in many myriad years,
But opened, fills the world with Wisdom's scent,
And Love's dropped honey; from thy royal root,
A Heavenly lotus springs. Ah, happy House!
Yet not all-happy, for a sword must pierce
Thy bowels for this boy."

This is pretty: but to the Christian reader it is too evidently illuminated, as also is the case not unfrequently in the rest of the poem, with rays of beauty gathered from another source, which rays first probably entered Sir Edwin Arnold's mind at his mother's knee.

The first mention of this visit of the aged devotee is in the Mahāvagga of the Sutta-Nipāta, where I think there are strong evidences of its being an interpolation. But the form of the narrative there is much more simple than in subsequent Buddhist writings, an example of which later description occurs in Spence Hardy's *Manual of Buddhism*, p. 147, which is taken, I believe, from the Pūjā-waliya, a book written in probably the thirteenth century of the Christian era. It is to such later accounts that Sir Edwin Arnold is apparently indebted for most of his imagery. But even to this he adds embellishments from the Christian story, as, for instance, in the expression "a sword must pierce thy bowels for this boy." It may be added that there is no evidence whatever, that there was any Hindu expectancy, at the time of Buddha's birth, of such a "blossom on our human tree," as should "fill the earth with Wisdom's scent, and Love's dropped honey," and "save all flesh."

Buddha himself, according to the earlier records, made no claim to be divine, or, indeed, to be anything more than a human teacher of a new path towards reaching peace of mind, and deliverance from the ills of life. He was a religious revolutionist in respect to religious methods.

With regard to the nature of our authorities, the literature of Buddhism is very extensive; and consists of books written at many different times. We cannot, of course, base the original history of Buddhism on the later books. There are also different phases of Buddhism in different countries; the religion, if it is to be so called, having received many modifications in Thibet, China, Burmah, and Japan; sometimes to the almost absolute subversion of its original character. The statement of Sir Edwin Arnold, therefore, in his preface to *The Light of Asia*, that "Four hundred and seventy millions

of our race live and die in the tenets of Gautama," must be taken with considerable qualifications. For instance the great mass of the Chinese, though commonly ranked amongst Buddhists, neither live nor die in the tenets of ancient Buddhism. (See Professor Legge's *Religions of China*.)

It is only in the most ancient sources that we can hope to reach the original tenets of Buddhism, and these are to be found, as I think also all scholars allow, in certain of the Ceylon books. Even the most ancient writings, however, do not reach, by any means, up to Buddha's time; and it is impossible to say how far they may have embedded previously existing manuscripts. Of this, however, we are certain, that for some time the tenets of the order were handed down from mouth to mouth, as is more than once stated in the books we have,* not, perhaps, because they could not write in those days (we have now learned that the art of writing is as old, at least, as the early Accadians, and was common among them); but for the sake of secrecy, as well, no doubt, as to give a certain dignity to what was taught, a custom that has always obtained in India, and is even to this day adopted in certain cases in our own island. There has been, no doubt, abundance of room and opportunity for additions and changes by speculative Buddhist writers, as time has passed on. We can, in fact, only separate the old from the new by the application of internal evidences, supported indeed to some extent, and it is to be hoped still further to be supported, or corrected, some day, much more at large, by external evidences furnished by antiquarian research in the North and perhaps other parts of India.

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* The original mode of keeping up the traditions was by question and answer: see the account of the Council of Rājagaha in the eleventh Khandhaka of the Chullavagga; this Council is said to have taken place immediately after Buddha's death. The same plan was adopted a hundred years after at the Council of Vesāli, where "the brother Revata" was brought forward, as "wise in the traditions," and "knowing by heart the Dhamma and the Vinaya" (*Chullavagga*, xii, 1, 10). Further, we are told in the Dīpavamsa, that in Ceylon in the reign of Vattagāmani, who is supposed to have lived about 400 years after the death of Buddha, the traditions as known in that Island were first put into writing: "Before this time the wise Bhikkhus had orally handed down the text of the three Pitakas and also the Atthakathā. At this time the Bhikkhus, who perceived the decay of created beings, assembled, and in order that the Religion might endure for a long time, they recorded (the texts) in written books." (*Dīpavamsa* xx, 20, 21.) It is, of course, possible that there had already been privately written memoranda.

There is nothing in what are evidently the earliest accounts to distinguish Buddha from other ascetics, of whom there were many, beyond the character of the new doctrine that he taught. The account of his royal birth, which we meet with, as we descend the stream of Buddhist literature, may or may not be true. I think there is no hint of it in the Mahāvagga of the Vinaya Pitaka, where his early ascetic history is recorded. Indeed in the Mahāvagga of the Sutta Nipāta he is in one place represented as saying, "No Brahmana am I, nor a king's son, nor any Vessa; having thoroughly observed the class of common people, I wander about the world reflectingly, possessing nothing." (*Sutta Nipāta*, v. 454.) This is in reply to a Brahman, who had asked him, "Of what family art thou?" It is, of course, possible that he might merely wish to ignore a royal descent before a proud and haughty high-caste man, and now only rank himself as a man among men. In either case he bears witness of, and bases his worthiness upon, the fact of his being "Calm, without anger, free from pain, free from desire, one with a good understanding;" and says further, "Do not ask about descent, but ask about conduct: from wood, it is true, fire is born: likewise a firm Muni (*i.e.*, a sage or religious saint), although belonging to a low family, may become noble, when restrained from sinning by humility." Here, as it seems to me, he lays down the first principles that had influenced his own mind. He further describes himself as being "subdued by truth;" "endowed with temperance;" "leaving sensual pleasures;" "whose passions are gone;" "one who is just with the just, and far from the unjust"—sentiments which occur over and over again in the Buddhist accounts of his conversations. (*Sutta Nipāta*, 462–468.)

What Buddha himself really was, and what we are to understand as his own original method of teaching, can only be gathered from the earliest accounts. Perhaps our best first authority is the Mahāvagga of the Vinaya Pitaka; not that it is altogether free in its present form from legendary matter, but because it, no doubt, contains some of the earliest traditions extant as to his original doctrines. Buddha's starting point seems to have been from the conviction of "ignorance:" the world was ignorant, the Brahmans were ignorant, he himself had been ignorant, of the right way. This is a natural starting point for every new teacher. But his own ignorance, he is reported to have said, had

passed away under long meditation; and the real nature of things became clear to his ardent gaze. It is true that this doctrine of "ignorance" assumed, perhaps, rather ultimately than from the first, a decidedly metaphysical aspect in the Buddhist teaching, not always easily grasped: but we can have no hesitation in understanding the first practical result of Buddha's new vision of the problem of human life; it was, as he early taught the five Brahman monks at Benares, that "there are two extremes, which he who has given up the world ought to avoid, viz., a life given to pleasures, devoted to pleasures and lusts, which is degrading, sensual, vulgar, ignoble, and profitless: and a life given to mortification, which is painful, ignoble, and profitless. By avoiding," he says, "these two extremes, the Tathāgata (*i.e.*, himself the Buddha) has gained the knowledge of the Middle Path, which leads to insight, which leads to wisdom, which conduces to calm, to knowledge, to the Sambodhi (that is, perfect knowledge, or Buddhahood), to Nirvāna." He then goes on to ask, "Which is this Middle Path, the knowledge of which the Tathāgata has gained? It is the holy eight-fold path, namely, Right Belief, Right Aspiration, Right Speech, Right Conduct, Right means of Livelihood, Right Endeavour, Right Memory, Right Meditation (*Mahāvagga*, 17, 18). He condemns on the one hand, the worldly, selfish, unholy life; and, on the other, the life of religious ritualism that existing devotees and ascetics were engaged in, and on which he himself had once entered; and takes a new, and, as it is here called, a Middle Path, toward the attainment of spiritual emancipation, as he understood it. This Middle Path is remarkable; and is of a totally different character from the line of religious duties laid down in any previous Hindu writings that I have seen. The Upanishads, for instance, are occupied with numerous sacrificial details and theories,* and most abstruse meditations as to the great

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* It seems to be sometimes overlooked that the ancient Hindu sacrificial system underlies the whole of the teaching of the Upanishads; (*e.g.*) the first disquisition on the syllable "Om" in the Chāndogya-Upanishad, i, 1, is towards the perfecting of the sacrificial rites. The same is the case as to other meditations: (*cf. Chāndogya-Up.* i, 5, 5; i, 11; ii, 23; ii, 24; iii, 17; iv, 16; &c.). "Let a man make him, who knows this (teaching) his Brahman priest (*i.e.*, for the purpose of offering sacrifice), not one who does not know it." (*Chānd.* iv, 17, 9). See also *Aitareya-āranyaka* ii, 3, 3; ii, 3, 4, &c.; and *Kaushītaki-Up.* ii, 3, 7, 8, &c.

Spirit of the Universe, and his relation to human things, but containing comparatively few references to moral truths. The Yogis no doubt then practised, as they still practise, certain bodily austerities; this manner of religious life Buddha defines under the one word "mortifications," which, he says, are "painful, ignoble, and profitless." But his own system was new and very different. Instead of the many religious external observances he would have Right Action in a moral sense. This I believe to have been, as I have already said, his first thought. And the revolution from a rule of ritual to a rule of conduct we can well understand to have been enormous.

Buddha, then, was a reforming ascetic amongst the many ascetics of his day, and further than this we can hardly go with anything like a feeling of certainty. That there may be a substratum of truth in the later accounts of his being a king's son; his youthful dismay at the first sight of old age, disease, and death; his forsaking of his young wife and child; is no doubt quite possible; but that wonderful history of his early years, so often quoted and admired, that "Great Renunciation," as it has been called, had better be regarded always, perhaps, as part of the "*Romantic* History" of Buddha. It is quite worth mentioning, in this connection, that a portion of that "Romantic" early history is found in the Mahāvagga of the Vinaya Pitaka, where it belongs to the history, not of Buddha, but of a noble youth of Benares, Yasa by name, who joined Buddha early in his career. I refer to the scene of the sleeping female musicians in the palace, the sight of whom is said to have reminded him of a cemetery of the dead. In this way embellishments were heaped upon the founder of Buddhism by zealous, and not always very truth-loving, devotees, as years passed on, at least one of which was stripped from the shoulders of even one of his own disciples.

We must now come to a more interesting, as well as more difficult part of Buddhistic teaching. What was to be the end of this new mode of religious life, which replaced the ancient Hindu systems of religious austerities, ritual, and resultless meditations, by the rule of personal conduct? And what suggested to Buddha this, to the then world of India, entirely new method of reaching peace of mind, and freedom from human ills? To take the last question first—the reply to it is by no means easy. But I cannot trace his method to any sufficient *data* in the then existing, or any

previous Hindu teachings, that have been handed down to us in writing. Sir Monier Williams has said, that "The close relationship of Buddhism to the Yoga system is well known"; and it has been stated by very scholarly persons, that Buddhism is merely a development of that system; some also have claimed the previous Sankhya system as containing the seeds of Buddha's teaching. But though Buddha no doubt began life as a Yogin with the accustomed rites, austerities, and meditations, yet, whatever the first bent of his meditations, he was ultimately forced, as we have seen, upon an entirely new path, the regulation of human conduct. I cannot resist the conviction that this new path came to him from without; though I am prepared to admit, that it is not an impossibility, that it may have grown out of traditions of moral truth, which, though not prominent in the Hindu sacred books, belonging, as they did, to an age when religious ritualism and mysticism had well nigh stamped out all other religious objects, yet no doubt still existed in the popular conscience. I cannot now discuss the question of external influences bearing on Buddha's teaching, beyond noting the extreme interest of the subject, and observing that there was at and before the time of Buddha—whose death, at the age of eighty, Professor Max Müller places at 447 B.C.—a centre of light in the lives and protests of certain of God's own people in the north, and even in the decrees of some heathen princes, against the wide influence of which there is no, even presumptive, evidence; and that, however sceptical many may be as to the possibility of Jewish light reaching North India, it is allowed by competent scholars, that in and after Alexander's time, Grecian art, at least, had power not only to reach, but materially to modify, Buddhist art on the Indian frontier; and that in later times it is undoubted that Christian missionaries and others, who have penetrated central Asia, have left traces of their methods among the Buddhists of Thibet. We cannot, therefore, too hastily put aside the possibility, at least, of still earlier influences from without, as regards religious and moral thought.

We now come to ask, what was to be the end, the goal, the ultimate purpose, of this new path of method in religion? To what was the rectitude of life to lead? In the study of this subject, we shall find ourselves often surrounded by many most perplexing, recondite, questions in Buddhist doctrine. As we try to reach the real goal, even the path

itself begins to be tortuous, and sometimes we find ourselves in quite a labyrinth of difficulties. But we must bear in mind that the first direction, and apparently main direction, we find to be on the lines of moral conduct. However much the path seems to turn out of the way towards the wilderness farther ahead, its first start, even viewed from a Christian stand-point, is straight. I may here add to what I have said above, that the rock inscriptions of North India, belonging, it is believed, to the time of Asōka, the great royal patron of Buddhism in the third century, B.C., favour the idea, that Buddhism, even in that early age, was chiefly remarkable for its simple morality. There may still be found on, I believe, more than one monument in North India, the verse thus translated by Professor Rhys Davids—

> "To cease from all sin,
> To get virtue,
> To cleanse one's own heart,
> This is the religion of the Buddhas."
> (*Dhammapada*, 183).

This sentiment must have been at the time one, at least, of the fundamental positions of Buddhist teaching.

But when we go to the Buddhist books, even the most ancient ones, we find the end of the holiness preached not, we think, always sufficiently exalted to terminate so beautiful a road. We may, perhaps, be sometimes more or less blinded by our own ideas of what ought to be. We must, no doubt, try, so far as we can, to surround ourselves with the religious atmosphere in which Buddha lived, that we may fully understand him; and we can understand something of the Hindu religion as practised by the Brahmans from our knowledge of the India of to-day, that which Buddha speaks of under the general term "mortifications." We also clearly discern, that Buddha's age must have been one of great licentiousness, pride, and worldliness, as well as consequent misery to thousands. In one respect we can understand the end of his method of life; it is "emancipation from suffering"; it is "freedom from vice"; it is "peace"; it is sometimes named "immortality," and the "immortal place" (*Dhammapada* 21, 114). But as we study the books, we find that the immortal end, named Nirvāna (in Pāli, Nibbāna) is, in fact, often described as a mere deliverance from Metempsychosis, or re-birth. This seems to be an altogether insufficient goal to inspire so arduous a race; and then, as we still further consider the path along

which Nirvāna is to be reached, we find that it is not merely, after all, by a rightly regulated life, but by absolute destruction of desire, lust, clinging to existence; by the "noble truth," in words put into the mouth of Buddha, "of the cessation of suffering, which ceases with the complete cessation of the thirst that leads to re-birth, a cessation which consists in the absence of every passion—with the abandoning of this thirst, with the doing away with it, with the deliverance from it, with the destruction of desire" (*Mahāvagga*, i, 6, 21). To reach this, the devotee must pass through experiences, and reach results, which, to say the least, are, in practice, impossible to human nature. Now, this superhuman power of effort, discipline, and result is frequently described as earning merely the extinction of the doom of re-birth. Thus in the *Mahāvagga*, where probably we have as ancient a record as any of the conversations of Buddha, he is made to say, "A learned, noble hearer of the word becomes weary of body, weary of sensation, weary of perception, weary of the Sankhāras (*i.e.*, the elements and properties of bodily existence), weary of consciousness. Becoming weary of all that, he divests himself of passion; by absence of passion he is made free; when he is free, he becomes aware that he is free; and he realises that re-birth is exhausted; that holiness is completed; that duty is fulfilled; and that there is no further return to this world" (*Mahāvagga*, i, 6, 46). He also says of himself, "This knowledge and insight arose in my mind, the emancipation of my mind cannot be lost, this is my last birth, hence I shall not be born again." And similarly in very many other passages. This doctrine of the re-birth had long been held in India. Thus one of the Upanishads says, "Those whose conduct has been good will quickly attain some good birth, the birth of a Brahman, or a Kshatriya, or a Vaisya. But those whose conduct has been evil, will quickly attain evil birth, the birth of a dog, or a hog, or a Chandāla." (*Chāndogya Upanishad*, v, 10, 7.) This was the doctrine as to the future, which held the popular mind, when Buddha was born. Could it have been only against this prospect of future birth that Buddha strove? Should the merit gained by a moral life, and the absolute destruction of the passions, secure an immunity from the doom of re-birth, what then? What lay beyond? This question could not escape, or appear of inferior moment to, the acute mind of a Hindu, such as Buddha.

Yet in all the Buddhist books we have no clear idea of the hereafter of the true disciple. That hereafter was, of course, Nirvāna. But what was the Nirvāna? It is spoken of under many different aspects, not merely as an emancipation from the doom of re-birth, but as the extinction of suffering, as bliss, as immortality. Certainly it never meant in Buddha's mouth annihilation of being, though it may have meant annihilation of the process of re-births. But it is by no means certain that it originally meant annihilation in any sense. It is true that the idea of annihilation of existence had been discussed quite early in the history of Buddhism; but this is what Buddha himself is reported to have said about it, "In which way is it, that one speaking truly could say of me 'The Samana Gotama maintains annihilation, and in this doctrine he trains his disciples?' I proclaim the annihilation of lust, of ill-will, of delusion; I proclaim the annihilation of the manifold conditions of heart, which are evil and not good" (*Mahāvagga*, vi, 31, 7). The fact seems to be that much of Buddha's teaching was often misunderstood and misapplied; and the result probably appears in even the most ancient of the Buddhist writings, in those intricate and perplexing statements as to causation and existence, the nature of the self, and the nature of the world. We are forced upon the question as to whether we find in many of the more puzzling passages in even the most authentic and ancient books, the actual original teachings of Buddha, or the results of a mystical Buddhism, that may have arisen much in the same way that Christian mysticism arose in the Middle Ages? The character of mysticism indicates that it is everywhere, to a great degree, if not entirely, the result of various natural tendencies of the human mind, especially the tendency to magnify the importance and extent of particular lines of thought, until they are forced out of due proportion to the other parts of the system to which they belong, and so throw the whole machinery out of gear, thus frustrating its real functions. The perplexities of Buddhist ontology naturally raise the very important question as to whether they all had their origin in Buddha's own mind, or in the minds of his many biographers and commentators. The consciousness of the difficulty of explaining many of the Buddhist propositions that are laid down in the books was evidently experienced by the writers themselves. Thus the writer of the *Mahāvagga* describes one of Buddha's early meditations in these

words, "I have penetrated this doctrine which is profound, difficult to perceive, and to understand, which brings quietude of heart, which is exalted, which is unattainable by reasoning, abstruse, intelligible only to the wise. This people, on the other hand, is given to desire, intent upon desire, delighting in desire. To this people, therefore, who are given to desire, intent upon desire, delighting in desire, the law of causality, and the chain of causation will be a matter difficult to understand; most difficult for them to understand will be also the extinction of all Sankhāras (*i.e.*, all environments of the self), the getting rid of all the substrata (of existence), the destruction of desire, the absence of passion, quietude of heart, Nirvāna!" (Mahāvagga i, 5, 2.) Did all these mysterious doctrines arise in the one mind of Gotama? Or did they arise in the discussion of his teaching by those who came after? I incline to the latter supposition, chiefly on the ground that the goal which Buddha desired to reach after this life, and which is called Nirvāna, is spoken of under so many different attributes, all sharing the idea simply of emancipation from the ills, present and anticipative, of existence; the actual path to which is evidently a moral, well regulated, life on earth. An actual definition of Nirvāna is nowhere found. Perhaps in ignorance of its real character Buddha avoided any attempt at definition. But it is not annihilation of existence, nor can it be merely deliverance from the doom of re-birth, although that deliverance is so often dwelt upon. Was it not, that this doctrine of the transmigration of souls was just the popular view of the future, that must first give way before a truer light? The mere prospect of successive changes of existence was not the real terror to be met, but the possible condition of such existence. We find descriptions in the Buddhist books of what amounts to endless life in hell and physical torments. In the Mahāvagga of the Sutta Nipāta we find the question, "How long is the rate of life, O venerable one, in the Paduma hell?" To which Buddha replies, "Long, O Bhikkhu, is the rate of life in the Paduma hell, it is not easy to calculate either by saying so many years or so many hundreds of years or so many thousands of years or so many hundred thousands of years." He then gives an illustration of the length of time in this hell, by supposing one sesamum seed to be taken from an immense heap after the lapse of every hundred years; the heap he says, would in this way sooner dwindle

away and be used up, than one Abbuda hell; and as the time passed in the Paduma hell is almost infinitely greater than the time passed in the Abbuda hell, the duration of such a state of existence is at least very considerable (*Sutta Nipāta*, M. 10.) The antithesis to this is, of course, Nirvāna. If Buddha really taught that hell was almost endlessly prolonged existence, why should he have taught that Nirvāna was a state of unconsciousness, or a negation of being? The fact is Nirvāna is rather spoken of as a state of perfect existence; what is put off, or annihilated, is the earthly body and the earthly state. We may take a few examples:—"Earnestness is the path of immortality (amṛita); thoughtlessness, the path of death. Those who are earnest do not die; those who are thoughtless are as if dead already" (*Dhammapada*, 21). "Rouse thyself! do not be idle! Follow the law of virtue! The virtuous rests in bliss in this world and in the next" (*Dham.*, 168). "This world is dark, few only can see here; a few only go to heaven, like birds escaped from the net" (*Dham.*, 174). "The Bhikkhu, full of delight, who is calm in the doctrine of Buddha, will reach the quiet place; cessation of natural desires and happiness" (*Dham.*, 381). "Him I call indeed a Brāhmana who has traversed this miry road, the impassable world and its vanity, who has gone through, and reached the other shore" (*Dham.*, 414). "Such a Bhikkhu who has turned away from desire and attachment, and is possessed of understanding in this world, has gone to the immortal peace, the unchangeable state of Nibbāna" (*Uragavagga*, 203). These passages are taken almost at haphazard, chiefly from one book; and in them we find the Nirvāna described as "immortality," an escape from death, "rest in bliss" in the next world, "heaven," "the quiet place," "the other shore," "the immortal peace." There is no idea of the cessation of existence, except earthly existence. And nowhere, so far as I know, is Nirvāna represented as a sleep or a state of unconsciousness. The end of Buddha's original teaching was evidently emancipation from the evils of existence, and his method of obtaining that end was a purified and moral life. Whatever was added to those simple elements was added, I suspect, in what we, perhaps, might venture to call the Spencerian phases of subsequent Buddhist philosophy.

The late Professor Childers, in his *Pāli Dictionary*, in a dissertation on Nibbâna, adduced a number of passages to sup-

port an idea that "Nirvāna is a brief period of bliss (of course in this life) followed by eternal death." The argument is undoubtedly clever and learned. But I do not think that any of the passages produced are conclusive on his side of the question. For instance, in those very remarkable verses 153 and 154 of the *Dhammapada*, where Professor Childers translated, "my soul, arrived at the gates of annihilation (visankhāra), has attained the destruction of human passion," Professor Max Müller translates, "the mind approaching the Eternal (visankhāra), has attained to the extinction of all desires." Again, in *Dhammapada*, 203, where Professor Childers translates, "Hunger is the worst disease, existence is the worst suffering, to him who realises this truth extinction is the highest bliss," Professor Max Müller translates, "Hunger is the worst of diseases, the body the greatest of pains; if one knows this truly, that is Nirvāna, the highest happiness." In not a few other passages Professor Childers has introduced the idea of annihilation of being, where the original does not appear to demand it, as notably in his rendering of *Dh.* 368, the meaning of which he gives thus:—"The man who lives in charity with all, rejoicing in the commandment of Buddha, will attain the tranquil blessed lot which is the cessation of existence." The same passage is, in Professor Max Müller's rendering:—"The Bhikshu who acts with kindness, who is calm in the doctrine of Buddha, will reach the quiet place (Nirvāna), cessation of natural desires, and happiness." In none of these passages is annihilation of existence necessarily implied as the only real idea of Nirvāna. I am strongly of opinion that Professor Max Müller's explanation of the "apparent coexistence of two irreconcilable doctrines of Nirvāna," is the correct one, viz., that "the two opposite sets of expressions represent two phases of the doctrine, the one ancient and the other modern; of these the original doctrine taught by Buddha is that of 'the entrance of the soul into rest,' while the dogma of annihilation is a perversion introduced by metaphysicians in later times" (Childers' *Dict. under* Nibbânam). Indeed, I have shown above, that Buddha himself seems, at any rate, in words attributed to him, to deny that he taught annihilation of existence.

The exact application of the many terms used in the Buddhist ontology, as understood by the men of Buddha's own age, is by no means easy of apprehension. Thus in one of the examples given above, the comparatively common word *Sankhāra*, which is the same as the Sanscrit *Samskāra*, is

by Professor Max Müller translated "body," and by Professor Childers "existence," in of course a much wider sense. No doubt Buddha used Hindu philosophical terms in the sense in which they were then understood. Even, however, as used by the Brāhmans, these terms are not always very easily apprehended by us, even when assisted by the most learned Pandits. And when we come to try to fathom their real application in later Buddhist writings, we may not unfrequently come to wrong conclusions. He, for instance, who hopes to reach the actual teaching of Buddha himself through the study of the "*Milinda Prasna*" may easily arrive at conclusions very wide of the truth.

One very remarkable word finds its way into what are undoubtedly early sayings in the *Mahāvagga*. I refer to the word attā, Sanscrit ātman. It is used in *Mahāvagga* i, 6, 38, &c., to express the "self," "The body (rūpa) is not the self (attā)." What was understood in Buddha's day by attā, or ātman? and why did he use the word? This word was used by the Brāhmans to denote the self of the Infinite one, the Deity, and the self of man. In its use it was exactly analogous to the Hebrew *ruach* and the Greek *pneuma*. For the human ātman, after a purified life, Buddha promises eternal rest and happiness. He nowhere, so far as indicated by the writings we have, defines either the condition of this Nirvāna, or anything about the self, beyond postulating its existence. But he uses a word, which by the Brāhmans of his days meant an objective reality, the spirit of man, an undying personality. There is nothing to show that Buddha himself held the doctrine of the *non-ego*: but much to indicate that that doctrine was developed afterwards in the course of Buddhistic argument.

The fact is, we can say nothing with certainty as to the actual teaching of Buddha himself beyond this,—that he taught the value of a purified life, and pointed to a better hope for the future, than the miserable outlook of Metempsychosis. In this respect he may be said, in a very important sense, to have been "the Light of Asia"; but we find in his teaching, as handed down to us, no evidence that he disclosed a "power that makes for righteousness" outside the mind of man, without a belief in which there can be no religion properly so called. The only cause, or power, disclosed as working towards the Nirvāna, was the destruction, by man's own wisdom and efforts, of sin and attachment to this worldly state; a common enough human belief. This primary

teaching was probably only afterwards philosophised into something that destroyed another supposed cause of the changes from one state of existence to another, held by the believers in metempsychosis, a cause which they called Kamma, or Karma, which is merely an abstract idea of the effects of merit and demerit.

In short, Buddha taught only the value of perfection in the moral life, which, however good in itself, is in truth always non-existent, except under a power higher than man's; a fact that the earlier Brāhman writers admitted. There being no revelation of such power in Buddhism, it cannot be with justice ranked as a religion. Therefore Buddhism has but little interest for the student of what has been called the Science of Religion, since it contains nothing of what is the essence of a religion, namely, an acknowledgment of a power above man's. Buddhism is founded upon a mere wreck of a traditional religion, that side only of religion which prescribes correct conduct.

In this view of Buddha's teaching, the efforts of some German writers to trace parallels between the histories of Buddha and of Jesus Christ are futile: for this reason, many of the legends of Buddha's life have entered the Buddhist accounts we know not how or when. We can only trace up to Buddha those methods on which he taught his band of ascetics after he himself had become an ascetic. He claims to have reached his conclusions himself. He certainly claims no divine power. The various legends of his divine birth; the adoration of Asita (of which there are several different versions); the temptation by Māra; the homage paid to him by various divine beings; his miracles; are entirely inconsistent with the real history of Buddha himself. They appear only, for the most part, in later books, some of them written probably hundreds of years after his death. The incidents in the life of Jesus Christ, on the contrary, are contained in accounts, of the historical character of which we have the most conclusive evidence. If we are to compare Buddhism with Christianity, so as to do justice to both, we must take only the undoubted teachings of Buddha, and the undoubted teachings of Jesus Christ—only thus will our conclusions be of any value. The legendary accounts of what may be called the superhuman side of Buddha's history, which have been at such length compared by Seydel and others with the facts of the life of Christ, cannot be shown to be necessary parts of the actual history of Buddha's mission.

Lastly, Buddha himself does not appear to have taught his followers any of those wonderful doctrines that are now disseminated under the names of Theosophy and Occultism. The mysteries of levitation; of passing solid bodies through stone walls; of spiriting written documents by unseen hands from one place to another; of apparitions and materializations of astral bodies; and other wonder-workings, are not found in the accounts of Buddha's early teaching. It is true that there are some wonderful powers attributed to Buddha in the later accounts of his doings; such as his rising up in the air and remaining seated there; his going into the Brahma-lōka (*i.e.*, heaven) to teach one of its inhabitants, who thereupon became a Buddhist; his omniscience; his eluding human measurement, on account of his being really of immeasurable height, though in ordinary appearance he was only like other men. But absurdities of this kind are not found either in the original teachings of Buddha or even in the earliest of other Hindu writings. Buddha did not spirit his epistles through the air to distant parts of the earth, or astonish his monks by causing plants to grow from seed, and clothe themselves with leaves and flowers in ten minutes; nor did he expound the mysteries of astral bodies; nor did he need darkness, with an occasional flash of gas or electricity, for the perfect teaching of his esoteric doctrines. And it is much to be desired that the Buddhists of Ceylon and other places would consider that there is no real relationship between modern Theosophy and ancient Buddhism. The Theosophists may have borrowed some ideas from *later* Hindu and Buddhistic *mythology;* but they are only such ideas as have grown up everywhere in ages of ignorance, under a speculative and, what we may perhaps call, mythic spirit; as when someone magnified the scene on Christ's resurrection morning by picturing Him as conducted from the sepulchre by two angels, whose heads were in the clouds, while the head of Christ Himself, who was between them, was out of sight up in the heavens.

If the present age is going to develop, as it seems to be rapidly developing, mythology, we shall probably soon have Madame Blavatsky canonized, and regarded, or even perhaps worshipped, as an omniscient Saviour of the human race, a kind of goddess-Buddha.

It is astonishing, after the disclosures that were made in Madras a few years ago, to find educated men still believing in the mysterious powers of "Koot Hoomi" and the Hima-

layan mahatmas; and to find them still followers of such men as Colonel Olcott, whom the too clever Blavatsky evidently, to judge by her language, regarded as one of her "*familiar muffs*." When gigantic impositions like Theosophy and Occultism can sway men, who are supposed to be educated, in this boasted nineteenth century, as they seem to be swaying Paris, for instance; it does seem as if our public schools and other educational bodies should look to their laurels. It is not many months since the chairman of a school board, in one of the largest towns in Yorkshire, presided at a lecture given by one of the most prominent of the expounders of Theosophy and Occultism.

But these modern pretensions are no development of, nor have they their origin in, ancient Buddhism.

The CHAIRMAN (Dr. T. CHAPLIN):—The applause which has followed the reading of this paper is an indication of the readiness with which you will join in a very warm vote of thanks to the Author.* For myself, I feel bound to say that I have never read and never listened to a more interesting paper upon this most important subject, and I venture to express the hope that those members and visitors who are present will favour the meeting with their views upon it.

Rev. G. U. POPE, D.D.—It has been a great pleasure to me to listen to the words of one whom I claim as an old friend and, in one sense, an old colleague, and, if I say anything at all it should be in the sense of supplementing from my South Indian experiences and studies the paper we have listened to. I do not wish for one moment to represent myself as knowing anything special about the original documents of Buddhism. I leave the consideration of that

* The Rev. R. Collins, M.A., was the selected author, in 1882, of the Institute's essay on Christianity and Buddhism which was discussed by several authorities at a meeting in 1884 (see vol. xviii). An able text book on the subject was the result, which was stereotyped and circulated in both hemispheres. The wide notice accorded to it, and to the Institute's action, by the press in the Colonies and America, had beneficial results, certain foreign correspondents reporting that the active propaganda of false views on the subject being carried on had been checked, and in some places abandoned.—ED.

part of the subject entirely on one side; but there is another part of it that I have been brought into contact with, for, I may say, fifty years, and that is the practical idea of Buddhism in the south of India. It is very curious that Buddhism at one time swayed almost the whole Tamil country. It had absolute possession of the minds of the foremost race of India, for the Tamil people may, intellectually, be called so, and are the most progressive. Buddhism had complete command over them. The evidence of this is quite clear from the travels of the Chinese monks, the remnants of their old buildings, and many other circumstances. But, at last Buddhism died out so utterly that now there is scarcely a single vestige of it, and one naturally asks what destroyed the influence of Buddhism in the south? There was another system—the Jain system which still survives, but the Jains were persecuted, hundreds of them were impaled, and the system was stamped out by horrors almost as great as those of the Inquisition. Buddhism was never persecuted in South India. There is no trace of any persecution of Buddhism, as distinguished from Jainism, at all; so that it did not lose its influence owing to persecution. The turning point of Buddhist history was somewhere about the ninth and tenth centuries—I am not quite certain of the date—but it was in the time of a very great man, Mãnikka-Vãçagar, an illustrious historic personage—one whose whole history lies before us—a man who was a mixture of St. Paul, and of St. Francis of Assisi. Of course, I do not mean to say that Mãnikka-Vãçagar taught the whole truth, certainly not, but the spirit of the man was such that he renounced everything to follow his convictions. He dated his conversion to his God from a certain hour, and from the fact that from that hour he was a new man. I think I may say that he lived very much the life of St. Paul to the end. A greater man, outside Christianity, than this sage, I believe never existed. He was the great reviver of the Çaiva system, and is called in their writings, the "Hammer" of the Buddhists. He went over to Ceylon, and there saw the king, preached Çaivism, was very ill-treated by the Buddhist monks, and then went home. The Buddhist monks said, "This man has come amongst us in this fanatical way, we shall have others coming. We will go to Cithambaram," and so a body of them went over the sea to the great Çaiva shrine, and established themselves there as a colony.

The king of Ceylon had a daughter who was dumb, and the king said, "I will take my dumb daughter to Mãnikka-Vãçagar,

and, if he can restore her speech I will become a Çaivite, and if he cannot do it I will remain firm in my old faith." I suppose so much is historical. Then came the controversy. I do not mean to say that every word of it is historical; but it shows pretty exactly what the feeling of the south was with regard to Buddhism, and why it had lost its influence over them. In the controversy which was very fierce and prolonged, first of all the Çaivite disputant says to them, "You have no souls, you have no God, you have no real Nirvana. How is that? First of all you say that there are five grades, or sheaths, the secret of all existence. There is then no substratum of being. Certainly you teach that as long as we live we have souls and consciousness, but consciousness itself is only the fifth degree of existence, and that is a sheath round the supposed ego. The passing away of these sheaths, one by one, leaves at death nothing, because there is nothing at the core of it, no *substratum* of existence. The Buddhist system has no real objective soul at all." The Buddhists were obliged to concede this, that on the death of organisms all these sheaths were stripped away from them, the last being consciousness, and when consciousness was gone, where was the ego? The next argument was, "this being the case you have no deliverance from sin. The only deliverance there can be is the destruction of consciousness when you sink into nonentity; and you have no God, because all this applies, in your books, to your Buddha. He himself, has only an earthly body, which was the result of these five characteristics, that passed away when he died, and conciousness is the last of them. So your God exists not, you have neither God nor soul, nor can you have deliverance." There seemed no way to answer this, and the whole mass of the people and the king, and all the rest of the Buddhists that had come in embraced the Çaiva system, on the ground that Buddhism gave them no assurance of the existence of the soul, or any conscious state of blessedness or rest after this visible phenomenon of existence had passed away. The consequence was that Buddhism died out in South India from that very time. I do not say that this is an exactly fair view of Buddhism, but it is the view taken of it by the southern part of India, and it was the fact that Buddhism lost its influence in consequence.

Another thing I should like to mention cursorily is this. The Çaiva people were challenged by the others in this way. "Well,

what is your soul, what is your God, what is your deliverance, you say we have none of these, what have you?" And in reply they said, "All souls are eternal as God is eternal. An eternal soul is sheathed in ignorance as in death, but no human effort can illuminate that darkness. From God there must proceed the Divine illumination. The light from Him must come into the human soul, or it never can see the light. You have no illuminating beam that can proceed from that nonentity of a Buddhist God, and it is clear that, according to Buddhism, your dead are gone to nothingness and passed away; but from our system comes the pure light, and raises the soul to Çaiva." There is one more thing, "We believe," they said, "in a conscious immortality. The souls of holy emancipated men become, as it were, satellites moving round a central sun. It never loses its consciousness or light through eternity, and for ever it revolves round the central light, and is sharing in its functions, perceptions and blessedness, and that is a much better system than your negative system." So with all its imperfections, Çaivism still reigns in the south, and Buddhism has ceased to do so. (Applause.)

Rev. KENNETH S. MACDONALD, D.D.—May I, as a missionary, and one who has given a great deal of thought to the subject, say a few words? I have been to Patna, and other places, with the special object of studying Buddhism. I entered on the study with a strong prejudice in favour of Buddha, principally arising from what I had read of Buddha, written by Europeans and Americans, and I followed Buddhism, as recorded in the books which profess to give us his life, with intense interest.

With regard to the paper that we have just had the privilege of hearing. First of all permit me to say that I concur heartily with the words of praise which the Chairman and the last speaker have uttered in regard to it, and I believe it to be well worthy of a hearty vote of thanks from us all. I have met people who seem to be afraid of being regarded as speaking hardly of Buddha and Buddhism. I do not think we should be afraid to speak out the truth openly with regard to it, and to stand to our guns, as far as the original writings bear us out in reference to that opinion. Praise is given to Buddha as to right conduct and moral conduct, the condemnation of sin and the approbation of virtue. To find the value of this you require first of all to ascertain what is right conduct in Buddha's point of view? What is sin from his point

of view? What is virtue from his point of view? Now, if we enter into these points, we find that his sin is very often no sin to us, his virtue is no virtue to us and his right conduct would be wrong conduct to us. One of the very first propositions he lays down as to right conduct would bring the human race to extinction in one generation, and so with regard to other points.

Now, with regard to Buddha's teaching, the starting point, as I understand it, is to be found in the Upanishads. Buddha believed that the world was as bad as it could possibly be, that suffering was the predominant feature of the world and the universe, and that the great thing that man had to do was to find out a way by which suffering could be destroyed; and when he discovered, as he believed he did discover, the right way by which this could be accomplished, he held that suffering was the result of desire, of action and of ignorance; but the starting point is, really, suffering, and if we care to know that these—desire, action, and ignorance—are the cause of suffering, then we start in the right way for the destruction of suffering: and undoubtedly he made one of the great points of his argument, that existence, in any form whatever, is the cause of suffering, just as he did desire, action and ignorance.

There is another matter I will say a word on, and that is with regard to the literature referred to on the last page but two of the paper.

"Many of the legends of Buddha's life have entered the Buddhist accounts we know not how or when. We can only trace up to Buddha those methods on which he taught his band of ascetics after he himself had become an ascetic. He claims to have reached his conclusions himself. He certainly claims no divine power. The various legends of his divine birth; the adoration of Asita (of which there are several different versions); the temptation of Māra; the homage paid to him by various divine beings; his miracles; are entirely inconsistent with the real history of Buddha. They appear only, for the most part, in later books, some of them written probably hundreds of years after Buddha's death."

I would say, not *some* of the books but *all* were written hundreds of years after the death of Buddha. There is not a single book that goes back to within 300 or 400 years of the death of Buddha. Then some of them as you will also see from another part of the lecture, were written as late as the 13th century of the Christian Era. I should have liked to have

seen more emphasis laid on the argument that the books from which points of resemblance between Christianity and Buddhism are obtained, are books which were written long after the establishment of Christianity and the dissemination of it throughout a great part of the world.*

Both at home and abroad, I would like much more to be done than is done by Christians, in the matter of opposing Buddhistic teaching, and I think it would be very desirable that some attempt should be made to meet the Buddhistic literature which is being circulated so extensively here in London, not only in books and tracts but in the periodical literature that is being distributed. I may mention a little incident connected with the manner in which this Buddhism or Theosophy is taught in London. I was present a few weeks ago at a "service" conducted by a man who called himself a minister. A text *from the New Testament* was given out, and the first sentence of the sermon was to the effect that the Bible was the most interesting book in the world, provided you did not read it religiously, and his second or third sentence was to the effect that the Bible consisted of incidents of teachings and stories taken from all the sacred books of the world, and that led up to the statement that the words of the text were taken from an incident in the life of Buddha! Now, I know a little about Buddha and the writings on Buddhism, and I have never heard of any Buddhistic writings that could in any way give a plausible ground for the statement made by that man from the pulpit. So next day I wrote a respectfully phrased card to the gentleman and said I should be very much obliged to him if he would tell me where he got the incident in the life of Buddha, with regard to the statement he made from the pulpit, and he replied—"You will find it in the *Maha-Vagga*." Now, this is a big book, about as big as our Bible, and to say to a person, "this incident you have referred to is in the Bible," would be rather vague, "unless chapter and verse" were given. However, after searching in vain for the incident in question, I invited my correspondent to meet me at the British Museum: on the appointed day, he did so, and with the book in question—with which I had previously provided myself from the Museum's shelves—before me: I told him I had been unable to find the incident in it

* See *Transactions*, vol. xviii, *Buddhism and Christianity*.—Ed.

and would he help me. He hesitated, and then said, "Oh, it must have been in the *Bahavatghita*." I turned to that book—with which I had also provided myself—and said I had been equally unable to find the incident there, whereupon he said, "Well, I am sorry I cannot help you, it might have been taken from the Upanishads." Now this is the name given to a large number of the sacred books of the East! He then added that he must have taken it from a certain book which he named. I asked him if he would let me see it, whereon he told me it was in New York; and we parted. However, thinking over the matter, I wrote a respectful letter asking him if he could kindly give me a reference to the matter from the notes of his discourse. He replied that "It is not convenient for me to do so." (Sensation.)

A Visitor.—May I ask if there is any reasonable doubt as to Buddha having really lived?

W. H. Robinson, Esq.—I believe there is no doubt about his having existed, but there is some doubt about the question whether he was a king's son, and the author of the paper seems to admit it is very much disputed. It is disproved, I think, by Dr. Oldenberg; who quotes certain ancient documents in existence nearer the time of the Buddha than the usually quoted legends, and referring to tribes and families near that to which he belonged. In these his father is referred to without the attribute of Rajah, while other small princes have it always carefully affixed to their names. In fact, it is proved that, in the literal sense of the word, he was not a king's son, although it is possible that afterwards it became a certain kind of custom to attribute to every religious teacher the quality of prince, and hence the Buddha came to be called by that title.

I quite agree with the author's strictures on Sir E. Arnold's book. It is unfortunate that the goodness of the author's style and construction are the only cause of the book's influence.

Buddha was a great man there is no doubt; and no doubt he did a great thing in emancipating the down-trodden people of his neighbourhood from their slavery to the Brahminical system. That is one great reason for the success of his teaching. He was furthermore an ascetic, and gave up the world and riches; but this was a very common thing in India, both before his days, during his days, after his days, and even to the present day, India is a land of asceticism. Men there will constantly give up

the world and its pleasures for the good of their fellow men, but we do not exalt them into the position of the "Saviour of the world," and say they are "In Earth and Heavens and Hells incomparable." We do not give them adulation of that kind, and apply language to them that men should rightly apply only to the object of their worship. (Hear, hear.) I say Sir Edwin Arnold's book is one of the most mischievous, and is chargeable with having given currency to the opinion among shallow, or uninformed thinkers, that the Buddha was at least as great a man as He whom Christians adore, and his religion in some respects preferable to Christianity. I acknowledge its talent. I only wish it were in my power to write as sweetly. I should think it was indeed a gift, and should try to use it. The danger of the book lies in the fact that the great bulk of the British public, who read it, cannot distinguish, and they have not the learning to distinguish, between the sweetness of the singer and the truth, or otherwise, whereof he sings.

There is one point that I should like to refer to, namely, in regard to the Upanishads. I do not think they were sacrificial at all, but were purely philosophical. The sacrificial portion of the old teaching of India is contained in the Vedas and in the Brahmanas.

Professor H. Langhorne Orchard, M.A., B.Sc.—We are indebted to Mr. Collins for leading us to discriminate between the teachings of the great Buddha himself and those of his followers. I am sure we shall all concur in what the last speaker has said in protesting with him against the title of "The Light of Asia," whether it calls itself poetry or any other form of composition; Buddha's title to be "the Light of Asia?" rests on a very poor basis. Buddha appears to have been a moral ascetic (as has been well pointed out), who sought after righteousness, but did not seek after God. Hence his conception of sin was simply as a means to avoid suffering, and his aim to remove sin was simply an aim to remove the cause or means of suffering. He had no true sense of sin as against God. It was offence against man, but not offence against God. The reason why sin was to be avoided was because it led to suffering. With regard to his conception of God, as far as he had any, it was that of unconscious force. There are, I think, seven principal reasons why Buddhism obtained such an influence over the human family. One, no doubt, was the personal

influence of Buddha himself, another was its non-exclusive claims. You may be a Buddhist and at the same time you may, if you like, be a Confucianist. Buddhism does not exclude other tenets. Another reason for its wide acceptance, no doubt, was that it professed to give an explanation or solution of the life mystery. It also professed to remove suffering. Besides those four reasons there are, I think, three other principal reasons why Buddhism has had the influence it has. It appeals to the intuition of a future state of existence. It also appeals to the intuition of right and wrong, and in common with all other false systems of religion, it recognises the intellectual intuition of a God as existing, *i.e.*, it admits the existence of some being higher and greater than man; but, while doing so, it is careful to avoid the practical responsibility which is logically connected with the belief in the existence of God. It is a counterfeit system. It is, like all counterfeits, an imitation of the truth. Every deceit is a counterfeit of some truth. Every false religion is a counterfeit of the true religion, the planner and worker of these counterfeits being Satan, the great enemy of God and man. Buddhism has its attractive features. Likening itself to an angel of light, or a minister of righteousness, it comes forward and promises freedom from the tyranny of the baser passions. How is this to be effected? It is to be effected not by the subjugation of the lower desires, but by their extinction; and not only their extinction, but the extinction of all other desires as well, even the desire of life and of thought itself. We may well ask what is left when this is done? A man is to be deprived of all that which makes him a man. That is the idea. It aims or professes to aim at purification, and how is this purification to be effected? The purification is to be effected by man himself; there is no Almighty Helper to him in his struggles and conflicts against evil. Buddhism, resting on no logical basis, fails to justify itself, as a philosophy. Buddha precludes reasoning; he admits that his system will not stand the test of logical analysis. And, failing to respond to the intuitions of the conscience, Buddhism fails to justify itself as a religion.

Mr. Robert Scott Moncrieff (a visitor).—If I might add a few words at this late hour, I would say that having read *The Light of Asia* very soon after it was published, I said, "how can that be Light which has produced darkness of the grossest kind?" I had been in Burmah. I spent a year there, and I knew something

of the country and the religion of the people. I had not been in China, but I had read something of the Buddhism there, and in Ceylon, and my experience and knowledge of it led me to perceive nothing in it but darkness of the grossest kind, and I thought it gross presumption on the part of any man to put forward as *The Light of Asia* that which has added to the darkness of that great country. I thought to myself, here is a false prophet. He may charm ever so wisely; but he is a false prophet, and it is to the charm of such poetry that we owe so much of this wretched Buddhism in this country. I thought if people who praise it up here spent six months in Burmah and saw the practical evidence there of the fruits of that religion, they would never for a moment entertain the nonsense they now do about this Buddhism. Sirs and ladies, I venture to ask you if any people on the face of the earth seem to be more utterly indifferent to the shedding of blood and to human suffering than the followers of Buddhism. At the same time, with all this wretched, horrible disregard for human suffering and human life, they show the greatest care for animal life. Some will not even drink a glass of water for fear of the microbes it contains, or kill a flea, be it ever so troublesome. These contradictions are parts of the darkness proceeding out of *The Light of Asia*, which we are asked to accept in preference to *The Light of the World*. (Applause.)

The AUTHOR.—Really all I can do is to thank those who have kindly spoken.

I thank Dr. Pope very much for his interesting appendix to the paper. I wish I could have added a great deal more; but, of course, one can only go a very short way into such a subject in a paper, and my paper is very long as it is.

I think it is true that Buddhism was driven out of India by argument, in point of fact by the common sense of the people; and it is very interesting to know that at that time Buddhists were accused of not believing in the soul; but I cannot think that that was the doctrine of Buddha himself. It may have been so, and that is a very important matter, perhaps, for investigation. The later doctrines of the Buddhist books, are claimed as being introduced into the world by Buddha himself, of whom we are told he became the great Saviour of mankind by teaching these things! They may not all, however, have been in the original teachings of Buddha himself, but may have grown up in the development of

what we call Buddhism, under various Buddhist teachers, and we find, in point of fact, that almost every book of Hindoo philosophy has entered more or less into questions discussed also by Buddhists; and that what people look upon as Buddhism now is simply a phase of Hindoo philosophy.

With regard to the Upanishads, to which reference has been made, there is certainly in them constant reference to the sacrificial system.

The AUTHOR.—continuing—In one, for instance, there is an account of a young Brahmin, who comes to his instructor; and he is instructed in various matters connected with sacrifices. Of course the great subject of the Upanishads is as to the existence of the universal spirit, and its influence in the world under the most remarkable and often beautiful illustrations; but I do not see anything there, that can be taken as the origin of Buddhism. I thank those who have expressed their appreciation of the paper. (Applause)

The Meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

Colonel CONDER, R.E., D.C.L., writes:—

The Rev. R. Collins has sought to refute some of the popular illusions regarding Buddha and Buddhism, which prevail in England at the present time, including: first, the belief that a third of the population of the world follows Buddha; secondly, that the legendary story of Buddha, found in the Lalita Vistara, is ancient and authentic; and thirdly, that the ignorant impostors who have adopted the term "Esoteric Buddhism," to delude the unwary, are authorities on Buddhism. Those who wish to know what is really thought by scholars will turn to the works of Rhys-Davids, Beal, and the numerous Pali and Sanskrit scholars who have contributed to Max Müller's library of "Sacred Books of the East."

If Buddhism can be said to be a religion at all, it is practically a dead one. Nothing would have astonished or disgusted the founder more than to find himself adored as a God, and his simple teaching converted into an ecclesiastical ritual of the most superstitious character. Neither in China, nor in India, nor in Thibet, does the spirit of Buddha influence so called Buddhists. What has received the name of Buddhism is merely the survival of that Paganism which Buddha failed to subvert. Even among the southern Buddhists of Ceylon and Burmah the number of real followers of Buddha's own teaching is probably very small.

The date of Buddha's birth and death is still a controversial question. He has been even placed as late as the time of Alexander the Great. The first authentic documents are the monumental decrees of Asoka, in the third century B.C., which speak of the *Dhamma* or sacred "law," of the *Sangha* or Buddhist "society," and of the *Bhikkus* or disciples." From the twelfth Edict it seems that many sects were equally tolerated by Asoka, and in the seventh we read:

"King Piyadasi, beloved of the gods, desires that all the sects should dwell at liberty in all places. They all indeed seek equally after submission and purity of heart, though the people are fickle in their aims, and fickle in their attachments."

The spread of Buddhism followed Alexander's march to India and Asoka himself was half a Greek, and mentions Antiochus Theos, Ptolemy II., Magas of Cyrene, and Alexander II. of Epirus, in his Edicts. It is difficult apparently to trace any Indian philosophy earlier than Alexander's times, and still a moot point whether Greece was more influenced by India in thought or India by Greece; but the presence of a civilisation which did not regard caste, in Bactria and Persia, certainly gave a great impetus to the Buddhist missionary movement, and the Bhikkus soon appeared in Persia, in Central Asia, and in China. From a passage in Josephus (*contra* Apion I, 22) it would seem that they even reached Northern Syria before the Christian Era.

But Buddha was concerned neither with religion nor with philosophy. The strength of his influence lay in his great compassion for the troubles of his fellow men. What he conceived to be the remedy was a "self control," which should put an end to ambition, avarice, and war. Prof. Rhys Davids (*Buddhism*, p. 88) sums up his teaching in the following extract:—"Try to get

as near wisdom and goodness as you can in this life. Trouble not yourselves about the gods. Disturb not yourselves by curiosities or desires as to a future existence. Seek only after the fruit of the noble path of self-culture and self-control."

In reading Buddhist works it seems to me that what Buddha meant by *Nirvana* was endless peace, and final rest after the troubles of the world; but later writers gave so many different explanations that almost any theory can be supported, by selecting certain passages from the enormous literature of the Buddhists.

As regards a few of the details of the paper, I would beg to note that writing is believed to have reached India about 600 B.C. The northern alphabets were derived from the Aramean scripts of Persia, the southern from the Arab characters of Yemen. In Asoka's time the Greek alphabet had also appeared on the coins of the Greek princes of Bactria.

The suggestion of Jewish influence in India in Buddha's time seems to me very improbable. The Jews were then captives, and only a small part of the Bible existed, in the form of scattered manuscripts, known only to the few, and not yet collected by Ezra. The Pentateuch was not translated into Greek till Asoka's time, and the same Ptolemy who caused this translation, is said by Eusebius to have collected Buddhist works as well. Between India and the Jews lay Persia, where the Zoroastrian creed was flourishing; and there is no trace of Jewish influence in the earlier books of the Zendavesta. If the Jews were unable to influence their Persian masters, it is hardly probable that they would have influenced the civilised states beyond. They were still a small subject people in Asoka's time, and it was not till the days of the Hasmoneans that they began powerfully to affect the thought of Western Asia.

As regards the Buddhist legends their importance would be much greater if they were peculiar to Buddhism. But this is not the case. Stories similar to some of them are found all over Asia, and which appear to be much older than Buddha. They occur in the mythology of the Turks, the Mongols, and the Chinese, as well as of the Persians and Hindus. Buddhism was not altogether unknown to the fathers of the Church—to Clement of Alexandria, Jerome, and others. (*Stromata* III, 7. *Contra Jovianum Epist.*), and Jerome knew the story of the Virgin birth of the Buddha. But I believe these coincidences between Buddhist and

Christian legends are found, not in the four Gospels, but in the Apocryphal Gospels of the fifth and sixth centuries, A.D. It can hardly be doubted in these cases that the explanation is found in the strong Manichean influence, prevailing in Syria when the apocryphal works were written. Manes claimed to be a Buddha (as we learn from Epiphanius and Cyril of Jerusalem), and incorporated many Hindu beliefs into his system, such as reincarnation and metempsychosis.

Rev. A. B. HUTCHINSON, M.A. (of Japan), writes :—

The title given by Sir E. Arnold to his brilliant but delusive poem *The Light of Asia*, suggests the reflection concerning the countries in which Buddhism prevails—"If the *Light* which is in thee be darkness, how *great* is that *darkness*." Moral precepts it has given to both China and Japan, but these have been for the most part empty words. Immorality on the part of the teachers has nullified their ethical utterances. In the absence of any recognition of the Creator and Preserver of the Universe there has been lacking a stimulus to good. Ignorant of God's righteousness a fictitious standard of good has been set up, and all sense of sin eliminated from the mind of the people. Good is in action rather than motive.

The paper opens a question of great interest, viz., the source of deliverance from ill taught by Sakya. It seems very probable that the precepts of Confucius, or rather those which the Chinese sage formulated from the ancient records of China, may have reached India and exercised a great influence over Sakya. The Doctrine of the Mean directly advocates the rectification of the heart as the first preliminary to reformation of life individual and social. Both in Confucianism and Buddhism there is the same fatal halting and silence when confronted by the question whence the power to do this thing? It is noticeable also that both in China and Japan, Nirvâna is practically unknown to the mass of people. A very material hell and heaven are looked for by these, and paradise to be ultimately reached is the goal of their desires. Man is in both countries supposed to have within himself the power requisite to self correction if he will but use it. The Rev. S. Beal some twelve years since pointed out to me that the miracles attributed to Buddha date from quite the

second century (*circa* A.D. 230) and he considered that the evidence showed them to be parodies of those recorded in the gospels. The motive for adopting them was presumably the necessity of withstanding the spread of Christianity in India. The popular Buddhism of Japan is as dissimilar to the original system as some aspects of Christianity in the present day are to primitive Christianity: so that the millions of either country may be said, in a sense, to live and die professing to hold the tenets either of Gautama or Christ. But a reversal to the original teaching of Christ undoubtedly results in Light—the Light of life, whilst a return to primitive Buddhism would be but a plunge into darkness a few degrees less obscure than total eclipse.

Professor LEGGE, D.D., (of Oxford), writes :—

I am sorry that I shall not be able to be present at the Meeting of the Victoria Institute to-night, and hear Mr. Collins's excellent paper on "Buddhism" and "the Light of Asia," which is to be read at it. I can only now seize a few minutes to express my agreement with Mr. Collins's judgments.

Of the literary and poetical merits of Sir Edwin Arnold's work it is not necessary to speak; and I would be far from denying the value and beauty of much of the teaching of Buddhism on human duty, and the course of life which man ought to pursue. The benevolence which it inculcates is also very attractive, and its spirit of generous self-sacrifice commands my highest admiration. At the same time, the exhibition of the virtues of kindness is often so grotesque that it does not fail to awaken a wondering astonishment in the beholder, and pity for the folly of the exhibitors. With such a feeling it was that I used to turn away from looking at the swine in the Honan Joss-house, opposite Canton; over-fed and over-grown, wallowing helplessly in their own filth, and at the over-crowded fish-pond on the top of Drum hill near Fu-chân.

As ridiculous are many of the stories of the self-sacrifice of Buddha himself, which were current as early as the time of Fa-hsien, in our fourth century, such as his saving a dove from the pursuing hawk by slicing a piece out of his own body, and throwing it to the latter, or his giving himself to be eaten by a starving tigress to make milk to feed her cubs.

Take the three principal doctrines of the Buddhistic system,—that of life as a condition of misery, of transmigration or the transrotation of births, and of *Nirvâna*, as deliverance from that transmigration, with no promise of an endless existence in conscious purity and happiness. I do not understand how a healthy, honest mind can see in it anything to be desired, and for which (not to introduce the subject of Christianity) the old religion of China, which is generally denominated Confucianism, should be forsaken.

Mr. Collins does not entirely accept the excessive estimate of the numbers of Buddhists as compared with that of the other principal religions of the world. Why should we, without authoritative statistics on the point, be ready to hand over to this system the largest percentage of mankind? I shall be surprised if it be proved that Buddhism has one hundred million followers. Sir Edwin Arnold, as quoted by Mr. Collins, estimates them at four hundred and seventy millions; seventy millions would, I think, be a nearer estimate.

Again, the influence of the system as a civilizer and elevator of man's social condition has been greatly over-rated. In illustration of this assertion let me quote part of an account given in the *Daily News*, of "a journey across Thibet," by Captain Bower, at a meeting of the Royal Geographical Society in 1893:—"As seen in Thibetan countries, the Buddhist religion has nothing in common with the pure morality preached by Gautama Buddha The doctrines of the founder are too abstract, he thinks, for the average Thibetan mind, and this has led to innovations which have developed until the grossest superstition, little better than African fetichism, and hardly bearing any resemblance to the original precepts, is all one meets with in this stronghold of Buddhism. The nomads were described as greedy, faithless, and suspicious. Their suspicions, however, do not attach only to foreigners, as every camp seems to view every other camp as not only a possible, but a very probable enemy."

For the moral and social state of the Mongols, I need only refer to that most interesting volume by the late Rev. James Gilmour,—his *Life among the Mongols*.

On the follies of what is called "Esoteric Buddhism," Mr. Collins's paper is explicit enough.

Professor Simon, D.D., writes:—

So far as I have enquired into the meaning of Nirvāna, I am inclined to think that the best definition is a very paradoxical one given me by a very intelligent Christian Japanese—"Life that is not life; and death that is not death." In fact, it is the Eastern, the Indian, equivalent to the doctrine taught by some of the Christian mystics, men like Eckhart. The two differ of course, because the antecedents and surroundings of the men differed; but the thing groped and felt after was probably in both cases identical, or as nearly so as might be.

S. W. Sutton, Esq., M.D., India, writes:—

I should like to send a few MS. comments on Mr. Collins' paper, chiefly for the sake of seeking information. Buddhism is a subject that I know very little about. As a missionary to an essentially Mahometan country, I rarely come in contact with it; indeed I do not know that I have ever seen an Asiatic Buddhist, though occasionally I have come across a stray one amongst my own countrymen.

1. "The question of external influences bearing on Buddha's teaching" is briefly alluded to by Mr. Collins on p. 169, &c., and it is a very important and interesting question.

2. It is difficult for an outsider like myself to arrive at a solution of the question. What does Buddhism teach about the existence or non-existence of the soul? Mr. Collins's observations seem to show conclusively that the Buddha himself did believe in the soul's existence. Professor Kellogg (in *The Light of Asia and the Light of the World*, pp. 187 seq.) seems equally convincing in the opposite direction. It also appears that on this question Professor Max Müller agrees with Mr. Collins, and that Mr. Rhys Davids agrees with Professor Kellogg! Here we have, it seems, a battle of the giants. But then I notice that Mr. Collins bases his opinion on the Mahāvagga of the Vinaya Pitaka; while Professor Kellogg bases his opinion on the Sutta Pitaka; and so the question necessarily arises, Is this really a battle of the giants, a disagreement between the Professors? or, is it a contradiction in the Buddhist writings? If it is a contradiction in the Buddhist writings, then we begin to get an idea as to how far Buddhism is entitled to be considered the Light of Asia.

3. But whether Buddhism does or does not contradict this particular human instinct of the soul's existence, it does deny another instinct of humanity, namely the existence of God. Buddhism knows no God. And what follows thence?

i. Without a God there can be no revelation. How much light has Asia received from this doctrine of no God and no revelation? Contrast with this the flood of light that comes from such a passage (to quote one only) as this: "God, having of old time spoken unto the fathers in the prophets by divers portions and in divers manners, hath at the end of these days spoken unto us in a Son . . . . Who being the effulgence of His glory, and the very image of His substance and upholding all things by the word of His power, when He had made purification of sins, sat down on the right hand of the Majesty on high." R. V.

ii. Without a God there can be no Inspiration. Even if the accepted teachings of the Buddha could be traced back to their reputed author with the same certainty that the books of the New Testament can be traced to their reputed authors, still the fact remains that the teaching is entirely human. There is nothing in it like to John xiv, 26; 2 Tim. iii, 16; 2 Pet. i, 21. With no Revelation and no Inspiration, how much light does Asia receive from Buddhism?

iii. With no God, it follows that there can be no law, and therefore no lawlessness, no sin. The Buddhist writings (I suppose) could give us nothing like that fundamental doctrine expressed so pithily by St. John; ἡ ἁμαρτία ἐστὶν ἡ ἀνομία: "sin is lawlessness."

iv. With no God, man is not held responsible to any supreme authority. Hence it follows that the basis of the ethics of Buddhism is not a distinction between right and wrong, but one between the advisable and the unadvisable. Whatever there may be in the place of law, it could not be called a law of righteousness, but only a law of expediency.

v. Lastly, as Mr. Collins points out on p. 167, see *ante*, without God "there is no acknowledgment of a power above man's." However noble may be the moral tenets of a religion (though I would not call Buddhism a religion) these tenets cannot be of any real practical use without some accompanying power, outside of and above man. This indeed was the very reason why St. Paul was not ashamed of the Gospel of Christ, for he knew it to be "*the power of God* unto Salvation," Rom. i, 16.

THE AUTHOR'S FURTHER REPLY.

October 12, 1895.

With regard to the very interesting question as to the influence of Early Buddhist Missionaries in Northern Syria before the Christian era, I should have been thankful if Colonel Conder had quoted the exact passage in *Josephus*, to which he refers. I am not aware of any mention in *Josephus* of Buddhist Missionaries. There is no word to connect the tenets, there alluded to, of either Pharisees, Sadducees, or Essenes, with Buddhist teaching. Nor in Contra Apion I, is there any evidence that the "*Kalani*," mentioned by Aristotle, were Buddhists. I have, however, touched upon this part of the subject in a former paper.

I can hardly see that the quotation from Professor Rhys Davids—"Disturb not yourselves by curiosities or desires as to a future existence"—represents the true character of Buddha's teaching. His one aim, as expressed in very numerous reports of his sayings, was to escape the endless *future* series of transmigrations of the soul then believed in; and the great end of his teaching was, that his devotees should enter Nirvána after death; Nirvána not being a word of his own coining, but a Hindu expression already applied to a future state of existence. I should rather have concluded from the often repeated sayings of Buddha, as reported by his disciples, that his teaching was—"Do everything with an eye to the Future."

The question of possible Jewish influence Southwards 600 years B.C. is, perhaps, not a very vital one. But was it not quite as possible for there to have been a Hebrew influence Southwards, as for there to have been a Buddhist influence Northwards? Babylon was, no doubt, directly in communication with India at that time through her merchants.

In reference to remarks by the Rev. A. B. Hutchinson, Professor Legge, and Dr. Sutton, I may add, that the moral precepts of Buddha do not seem to have secured any high state of morality in the Buddhist Priests of Ceylon, unless they are greatly belied by the testimony of their own countrymen. Practically the

Buddhism of to-day in Ceylon consists of an ignorant adoration of a legendary Buddha, and a recourse to the devil-worship and sorcery that pervade nearly the whole of India. The hope of Nirvána has vanished long since, it being regarded as something utterly unattainable in the present age. The future looked for is simply re-birth, the nature of which is supposed to be determined by the merit or demerit of the past.

There is not the least evidence, that there was ever any esoteric, as contrasted with exoteric, system of doctrines in Buddhism. It is, perhaps, worth noting, that even Madame Blavatsky herself, in her *Secret Doctrine*, denies that Mr. Sinnett's *Esoteric Buddhism* is a proper representation of the actual teaching of Buddha. "Esoteric Buddhism" is the offspring of modern European brains. It is also certainly the fact, that many of the European discussions on ancient Buddhism and Hinduism have originated among the youth of India and Ceylon a class of ideas on religious questions that, thirty or forty years ago, the most deeply read Pundits never dreamt of.

ORDINARY MEETING.*

D. Howard, Esq., D.L., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Hon. Cor. Members :—The Right Hon. Lord Kelvin, P.R.S.; the Rev. President C. V. A. Vandyck, D.D.

Members :—E. Chapman, Esq., M.A., F.L.S., Lancashire ; G. J. Chapman, Esq., M.A., D.C.L. Oxon., F.Z.S., Yorkshire ; Rev. E. Walford-Green (Pres. Wes. Conf.), Kent ; Rev. D. J. McMillan, D.D., United States ; J. Story, Esq., Cyprus ; E. B. Underhill, Esq., LL.D., London ; Colonel R. Williams, M.P., Dorset.

Associates :—The Right Rev. Bishop Whipple, United States ; Rev W. W. Adams, D.D., United States ; Rev. E. C. Aspinall, Falkland Islands ; Rev. B. W. Bacon, M.A., D.D., United States ; Rev. A. Brooks, D.D., United States ; Professor Hiram H. Bice, United States ; the Ven. Archdeacon Chambré, A.B., A.M., D.D., United States ; A. Carroll, Esq., LL.D., New South Wales ; W. Bartley Hartley, Esq., M.R.C.S., L.R.C.P., South Africa ; Rev. Morgan Dix, St.D., D.C.L., United States ; Rev. W. Frackelton, M.A., M.Sc., B.D., New South Wales ; Rev. O. O. Fletcher, D.D., United States ; Rev. L. R. Fox, United States ; Rev. A. Kingsley Glover, United States ; Rev. E. Harewood, D.D., United States ; Very Rev. Dean Hoffman, D.D., United States ; Rev. W. R. Harper, Ph.D., LL.D., United States ; Rev. J. R. Jewell, Ph.D., LL.D., United States ; W. K. Morehead, Esq., Curator Columbus Univ., United States ; Rev. H. Müller, V.D.M., South Africa ; Rev. T. Oliver, D.D., T.C.D., Lancashire ; Rev. S. Pike, M.A., Middlesex ; Rev. J. C. Quinn, A.M., Ph.D., D.D., United States ; Rev. G. Rogerson, M.A., Devon ; James Stokes, Esq., United States ; Rev. P. Tinley, D.D., United States ; A. E. Tomlinson, B.A., West Indies ; Yoshio Mikami, Esq., Japan ; Rev. J. Zimmerman, United States.

Hon. Correspondents :—Col. M. McCausland, Ireland ; Sir F. Howard, Bedfordshire.

A lecture entitled "Notes on the Geneva Orientalist Congress, with especial reference to the Semitic section of Languages" was then delivered by Mr. Theo. G. Pinches, M.R.A.S. A discussion of a general character ensued, in which the Rev. Canon Girdlestone, Dr. Riev, Rev. Dr. A. Löwy, Dr. Koelle, and others took part. The meeting was then adjourned.

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* 1st of 30th Session.

TWENTY-EIGHTH ANNUAL GENERAL MEETING.

(HELD AT THE HOUSE OF THE SOCIETY OF ARTS.)

Monday, July 16th, 1894.

The President,

Sir GEORGE GABRIEL STOKES, Bart., LL.D., Sc.D., F.R.S.,

IN THE CHAIR.

[The delay in publishing the proceedings of the Annual Meetings has been increased by the omission of the records of one such meeting, in a recent volume. To obviate such delay in future the proceedings of the twenty-eighth Annual Meeting are inserted here.]

Captain FRANCIS PETRIE, F.G.S., &c., Hon. Sec., read the following Report:—

Progress of the Institute.

In presenting the TWENTY-EIGHTH ANNUAL REPORT, the Council is glad to be able to state that the progress of the Victoria Institute is fully maintained, not only as regards the importance and usefulness of its philosophical and scientific investigations, but also in respect to the augmented number of home and foreign members now contributing to enhance the value of these, and the cordial assistance which the Institute ever receives from such leading men of science as may not already have joined its ranks.

In order that every advantage may be derived from the labours of those now furthering its objects, and that the efficiency of the Institute may not only be maintained but augmented, the Council is anxious that the importance of adding to the number of its supporters should be a subject present to the minds of all members and associates, both at home and abroad, and to this end asks their co-operation.

Many leading home and foreign societies exchange Transactions with the Institute, and an increasing number of Universities, Colleges, Royal and Public Libraries in various countries subscribe (as Associates) for its Transactions.

The Library of Reference is in need of larger funds in order to maintain it in that efficient condition which is so necessary considering the important use made of it.

The following is the new list of the President and Council :—

President.

Sir George Gabriel Stokes, Bart, LL.D., Sc.D., F.R.S.

Vice-Presidents.

The Rt. Hon. Lord Halsbury, P.C., F.R.S.
Sir H. Barkly, G.C.M.G., K.C.B., F.R.S.
Sir Joseph Fayrer, K.C.S.I., F.R.S.
W. Forsyth, Esq., Q.C., LL.D.
Alexander McArthur, Esq., J.P., D.L.
The Venerable Archdeacon Robinson Thornton, D.D.
W. H. Hudleston, Esq., M.A., F.R.S., *Past President of the Geological Society.*

Trustees.

D. Howard, Esq., D.L., F.C.S.
Rev. Preb. H. Wace, D.D.
W. N. West, Esq., F.R.G.S., F.R.Hist.Soc.

Hon. Auditors—J. Allen, Esq.: J. E. Wakefield, Esq.
Extra—Colonel T. A. Le Mesurier.

Council.

Hon. Treas.—W. N. West, Esq., F.R.G.S., F.R.Hist.S.
Hon. Sec —Capt. F. W. H. Petrie, F.G.S., &c.

*E. J. Morshead, Esq., F.M.C.S. (*For. Cor.*).
William Vanner, Esq., F.R.M.S.
S. D. Waddy, Esq., Q.C.
Rev. J. H. Rigg, D.D.
H. Cadman Jones, Esq., M.A.
Rev. W. Arthur.
Rev. J. Angus, M.A., D.D.
J. Bateman, Esq., F.R.S., F.L.S.
*D. Howard, Esq., D.L., F.C.S.
Professor H. A. Nicholson, M.D., F.R.S.E.
Bisset Hawkins, Esq., M.D., F.R.S.
The Bishop of Wakefield.
Rev. F. W. Tremlett, D.C.L.
Surg.-Gen. Gordon, M.D., C.B. Q.H.P.
His Excellency Dr. R. H. Gunning, F.R.S.E.

*Rev. Preb. H. Wace, D.D.
Rev. J. J. Lias, M.A.
*Gen. G. S. Hallowes (*Cor. Sec.*).
Rev. A. I. McCaul, M.A.
Capt. Creak, R.N., F.R.S., &c.
Rev. F. A. Walker, D.D., F.L.S.
T. Chaplin, Esq., M.D.
Admiral H. D. Grant, C.B.
Rev. Canon Girdlestone, M.A.
Professor E. Hull, LL.D., F.R.S.
Lt.-Col. Freeman, M.A.
Sir G. Buchanan, M.D., F.R.S.
T. G. Pinches, Esq. (*Brit. Mus.*).
The Ven. Archdeacon Sinclair, M.A.
Dr. Gerard Smith, M.R.C.S.E.

* *Ex officio.*

The Council regret to announce the decease of the following supporters of the Institute :—

W. G. Ainslie, Esq., M.P., *M.*; Rev. W. H. Aspden, *M.*; Rev. J. Barnier, LL.D., *A.*; G. W. Childs, Esq., *A.*; Rev. N. G. Clark, D.D., LL.D., *A.*; Rev. E. C. d'Auquier, M.A., *M.* The Rev. C. F. Deems, D.D., LL.D., the Founder and President of the American Institute of Christian

Philosophy.* Rev. Professor J. F. Garrison, M.A., M.D., D.D., *A.*; J. E. Green, Esq., F.R.G.S., *A.*; J. Griffith, Esq., *F.L.M.*; The Most Rev. H. J. C. Harper, D.D., late Bishop of Christchurch, New Zealand, *M.*; Rev. Canon E. J. Hartrick, A.M., T.C.D.; Elkanah Healey, Esq., *F.M.*, one of the first founders of the Institute. Prof. J. R. Leebody, M.A., D.Sc, F.I.C., *A.*; E. Liddon, Esq., M.D., *A.*; Prof. N. T. Lupton, M.D., LL.D. (Vanderbilt Univ.), and State chemist, *L.A.*; J. J. Murphy, Esq., *A.*; The Right Rev. H. H. Parry, D.D., Bishop of Perth, W.A., *A.*; the Rev. President H. R. Reynolds, D.D., *A.*; R. J. Svape, Esq., *A.*; T. W. Vessey, Esq., *A.*; Sereno Watson, Esq., M.A., Ph.D., Curator of Harvard Herbarium, *A.*; E. Whitwell, Esq., *F.M.*; Rev. W. R. Wright, M.A., *A.*

F. Foundation. *L.* Life. *M.* Member. *A.* Associate.

The following is a statement of the changes which have occurred :—

	Life Members.	Life Associates.	Annual Members.	Annual Associates
Numbers on June 20, 1893	62	44	362	853
Deduct Deaths	1	1	6	14
,, Retirements, changes, &c.			5	20
	—	—	— 11	— 34
			351	819
Changes	—	—	2	2
	—	—		
			353	821
Joined to June 30, 1894....	1	4	8	40
	62	47	361	861
	109		1222	

Total 1331

Hon. Correspondents number 140. Total .... 1471.

Finance.

The Treasurer's Balance-sheet for the year ending December 31, 1893, duly audited,† shows a balance debtor of £3 19*s.* 10*d.*, after the payment of all liabilities, with the exception of a small bill due to the printer. The amount invested in 2¾ per Cent. Consols is £1,365 18*s.* 9*d.*

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* An independent society, established on the lines of the Victoria Institute, whose statement of objects it adopted. Many of its members continue to remain members of the Victoria Institute, to the value of whose work they are among the foremost to bear testimony.

† On account of the temporary illness of Mr. Wakefield, one of the Auditors, his duty was taken by Colonel T. A. Le Mesurier, whose professional duties marked him out as one eminently fit to act in his stead.

The Council desires to urge the very great importance of all Subscriptions being remitted during the first half of the year, as a large proportion already are. Were this the rule a difficulty in the management of the Institute would be removed. Forms for the payment of the Subscriptions through a banker are used by a large number, and may be had at the office.

The arrears of subscriptions are as follows:—

	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.
Members	1	2	11	0	1	3	0	6	10
Associates	6	1	3	2	8	15	6	5	15
	7	3	14	2	9	18	6	11	25

MEETINGS.

The Council has been specially desirous that so far as possible no Member or Associate wishing to take a part in considering the subjects brought before the Institute, should be prevented by distance from so doing, and to this end arrangements have been made whereby all those interested in the various subjects brought forward, but unable in consequence of distance to attend the meetings, might, *by intimating their wish, receive proof copies of the papers to be read*, and send in any comments they may see fit at once or within three months (such comments being brought before the Council with a view of being read at the Meeting or included in the discussion, published after each paper in the Journal).

Representations having been made by several members living in London and in the home counties, that in consequence of the late hour at which the Institute's meetings were held they were unable to be present thereat, and experience having shown that this late hour often deprived the Institute of the presence not only of leading authorities upon the subjects taken up,* but also of many desirous of being listeners, the Council took steps to gather the opinions of the members upon the question of adopting an earlier hour for the meetings, with the result that it was found an overwhelming majority were in favour of the earlier hour of half-past four. The meetings of the second half of the Session were therefore fixed at the earlier hour and with the most successful results.

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* Among these the late Sir Richard Owen—who constantly wrote to say that he could never attend at so late an hour.

8 O'CLOCK MEETINGS.

MONDAY, DECEMBER 4, 1893.—"An Inquiry into the Formation of Habit in Man." By ALFRED TAYLOR SCHOFIELD, Esq., M.D.

This subject, an important one, was considered in connexion with the researches carried out and described by Dr. Hill (Master of Downing)—see vol. 26. The discussion was taken part in by the President, Dr. Hill, Surgeon-General Gordon, C.B., Surgeon-Major Black, Dr. Gerard Smith, and many others.

MONDAY, JANUARY 1, 1894.—On the "Endurance of Cosmic Conditions." By Professor J. LOGAN LOBLEY, F.G.S., &c.

MONDAY, JANUARY 15.—"Holy Scripture, Illustrated and Confirmed by Recent Discoveries in Palestine and the East." By Professor EDWARD HULL, LL.D., F.R.S., F.G.S., &c.

The consideration of this subject was contributed to by Major Conder, Mr. Rassam, Professor J. H. Gladstone, F.R.S., and others

MONDAY, FEBRUARY 5.—"On Extinct Animals in relation to Living Types." A Lecture, by Rev. H. N. HUTCHINSON, B.A., F.G.S.

MONDAY, FEBRUARY 19.—On "The Physical Conception of Nature," considered by G. MACLOSKIE, D.Sc., LL.D., Prof. of Biology, Princeton, U.S.A

Biological research has sometimes been regarded as a branch of science which does not readily illustrate the Creator's hand, and some biologists have even urged that its evidence is negative, hence the subject has long been felt as one that ought to be taken up, and is here treated on by an accomplished biologist like Dr. Macloskie and discussed by Mr. G. B. Buckton, F.R.S., Professors Bernard, Duns, Orchard and others.

MONDAY, MARCH 5.—"On the Origin of the Australian Race," by Dr. J. FRASER, M.D., F.R.S. (N.S.W.).

None have so long and closely studied this question as the author

HALF-PAST 4 O'CLOCK MEETINGS.

MONDAY, MARCH 19.—"A possible Cause for the Origin of the Tradition of the Flood," by Professor J. PRESTWICH, D.C.L., M.A., F.R.S., &c. Discussion by THE PRESIDENT and leading Fellows of the Geological Society. Also communications from Sir W. DAWSON, C.M.G., F.R.S., and others. *Meeting at the Society of Arts House.*

In considering this paper which states as a result of the life labours of one pre-eminent among geologists, that the facts of geology are only explicable upon the hypothesis of a widespread and short submergence of continental dimensions, the President, Sir W. Dawson, F.R.S., Dr. Woodward, F.R.S., President of the Geological Society, Sir H. Howorth, K.C.I.E., F.R.S., Professors T. R. Jones, F.R.S., T. McK. Hughes, F.R.S., E. Hull, F.R.S., and others took part.

MONDAY, APRIL 2.—"Eastern Exploration," by H. RASSAM, Esq.

Lord Halsbury presided on this occasion. Mr. Rassam described his researches and the best mode of procedure in Assyrian and Babylonian exploration. (Such exploration on the part of England has been stopped since 1882 for want of the necessary firman.)

Monday, April 16.—"The Religion of the Assyrians and Babylonians," by Theophilus G. Pinches, Esq., of the Brit. Museum.

The author's researches among other matters showed that Monotheism, so far from not being known before the time of Abraham (as some leading authors have of late asserted), was proved by the tablets to have been in existence in the third millennium B.C. Sir H. Howorth, K.C.I.E., F.R.S., the Rev. Dr. Löwe, Mr. Rassam, Colonel Conder, and others took part in considering the subject.

Monday, May 7.—"Chinese Ethics and Philosophy," by Surg.-General C. A. Gordon, C.B. Address on same by Sir T. Wade, G.C.M.G., K.C.B.

The object of bringing forward this subject was to throw more light on the laws, domestic life and character of a land, little understood, with a history reaching back to the earliest ages, and possessing moreover a vast population gradually adopting western civilization, likely to be most powerful in the future, but at present needing the right application of good and not evil influences.

Monday, June 4.—"Causes of the Ice-Age," by Warren Upham, Esq., Assist. State Geologist, U.S. Government.

At this meeting was practically concluded the line of research begun in 1892 by Sir W. Dawson, Mr. Mello, and others, with a view of ascertaining how far geological research in America as well as elsewhere pointed to the date of the "Great Ice-Age," supposed to be the limit to which the age of man might be referred, and which had been fixed by some at 200,000 years, and even more. On this occasion Professors Prestwich, F.R.S., Geikie, F.R.S., T. Rupert Jones, F.R.S., General Drayson, R.E., Professor Logan Lobley, F.G.S., and others took part in the investigation, the first urging that whilst American geological research suggested 10,000 years for the close of the glacial epoch, similar research elsewhere and of a totally different character, seemed not to warrant more than 12,000 as the utmost time that could be allowed.

Monday, July 16.—*Annual Meeting*, address by Professor Duns, D.D., F.R.S.E., *at the House of the Society of Arts.*

Publications.

The twenty-seventh volume of Transactions is now in course of publication.

From time to time the Members of the Institute and others have expressed their high sense of the value of the Transactions of the Institute, inasmuch as they *contained, not the opinions of any one person only, but of many*, resident in various and even distant parts of the world, whose studies had lain in the direction of the subjects taken up. That a system like this carried on by a competent body or Society gives a value to the treatment of the several subjects beyond that which any individual author could give is evident.

Lectures.

Members, at home and abroad, continue to use the papers in the Journal as lectures, or as the basis of such, and

amongst the extensive correspondence received are applications for information of all kinds in regard to subjects upon which members desire to prepare for or arrange local lectures. Translations also continue to be made.*

The Special Fund.

This fund was founded with a view to still further advance the influence of the Institute. I. By the publication of the twelve papers in the People's Edition. II. For helping to give grants of papers or volumes of the Transactions to those Home and Colonial bodies which may specially need such. (Many applications have been refused of late, as the fund has not been sufficient.) III. To maintain the Institute's Library of Reference.

Conclusion.

All must feel thankful for the Victoria Institute's progress in the past. Its high objects and the manner in which these are sought to be carried out have earned it supporters in most countries, but with so wide-spread a constituency it has become necessary that it should be stronger in numbers.

On behalf of the Council,
G. G. STOKES, *President.*

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* Last year it was reported that for many years, translations from the Journal have been made by Members, resident abroad, into various languages, and have been published by them ; such translations have already appeared in several instances in the dialects of India ; in French ; Italian ; Spanish ; Portuguese, and other languages,—in arranging as to the last named, the late Emperor of Brazil (who was a member and possessed a complete set of the Institute's Transactions) was one who took a special interest. In regard to the value of such translations in China, the Archdeacon of Mid. China—who has been an earnest supporter of the Institute for twenty-seven years—after describing the changes coming over China at the present time, and the thirst there for modern books on scientific and other subjects, says :—" What better books can we place in the hands of these eager Chinese than the Transactions or extracts from the Transactions of our Institute? I have great hopes in this direction. I shall certainly suggest that some of the most valuable works to be translated into that language would be the Victoria Institute Papers. I thank God for this Institute ; may it live long and prosper!"

ANNUAL BALANCE-SHEET, *from 1st January to 31st December*, 1893.

RECEIPTS.	£	s.	d.	£	s.	d.
Balance from 1892				92	10	8
Subscriptions:—						
1 Life Member	21	0	0			
3 Life Associates	31	10	0			
				52	10	0
1 Member, 1890	2	2	0			
2 „ 1891	4	4	0			
9 „ 1892	18	18	0			
188 „ 1893	394	16	0			
2 „ 1894	4	4	0			
7 Entrance Fees	7	7	0			
1 Associate for the 7 years, 1882 to 1888	7	7	0			
2 Associates, 1889	2	2	0			
7 „ 1890	7	7	0			
14 „ 1891	14	14	0			
35 „ 1892	36	15	0			
439 „ 1893	460	19	0			
15 „ 1894	15	15	0			
Extra	0	10	6			
				977	0	6
Div. on £1,365 18*s.* 9*d.* 2¾ p.c. Consols ..	..	..	..	36	10	10
The Gunning Fund	..	..	..	20	0	0
Donations to Special Fund*	..	..	..	1	11	0
Sale of Journals, &c.	..	..	..	34	15	11
Balance, Dr.	..	..	..	3	19	10
				£1,218	18	9

EXPENDITURE.	£	s.	d.
Printing	347	1	5
Postage and Parcels	100	3	5
Binding	4	4	1
Reporting	25	4	0
Typewriting	1	0	8
Stationery and Lithography	37	19	6
Advertising	30	11	5
Expenses of Meetings	20	12	6
Travelling	14	8	10
Salaries and assistance for Year	92	0	11
Rent	180	0	0
Housekeeper	1	3	5
Coal and Light	13	3	8
Library and Furniture	28	16	5
Organization	315	0	0
Insurance	0	12	0
Bank Charges	1	1	6
Sundries	5	15	0
	£1,218	18	9

We have examined the Balance-Sheet with the Books and Vouchers, and find a Balance Dr. of £3 19*s.* 10*d.*

JOHN ALLEN,
T. A. LE MESURIER, } *Auditors.*

W. N. WEST, *Hon. Treas.*

* H. C. Dent, Esq., £1 1s. 0d.; Mrs. W. H. Blair, 10s.

[In opening the proceedings letters were read from the following members who were unable to be present on this occasion:—His Excellency the Hon. T. F. Bayard, the United States Ambassador, who wrote—"If it be possible I will try to be at the Annual Meeting on Monday. I am glad to see so satisfactory a Report." From the Right Hon. Lord Kelvin, P.R.S., who wrote—"I am very sorry I shall be out of London at the time; if I had been present I should have had pleasure in proposing the vote of thanks to Sir George Stokes." Letters of regret were also received from Professor Prestwich, LL.D., F.R.S., Professor Sayce, D.D., and others.]

Sir Henry Barkly, G.C.M.G., K.C.B., F.R.S.—My lord, ladies and gentlemen: You have heard the principal portion of the report read by our indefatigable Hon. Secretary, and I will therefore confine myself to congratulating the Institute on the progress it has made during the past year, and to expressing a hope, in which I am sure you will all join, that the Institute will long continue to carry out successfully the all-important objects for which it was founded.

I beg, therefore, to move, "that the report be received, and the thanks of the members and associates presented to the Council, Hon. Officers and Auditors for their efficient conduct of the business of the Victoria Institute during the year." (Applause.)

Sir George Buchanan, F.R.S.—It is my privilege to second this Resolution. I will not add to the words that have fallen from the proposer of it, but commend the services rendered to the Institute by its Officers, services that have made the Victoria Institute what it now is. (Applause.)

The resolution was then put to the meeting and carried with acclamation.

Surgeon-General C.A. Gordon, C.B., Q.H.P.—On the part of the Council I am directed to return our best thanks for the Resolution, and the kindly manner in which it has been received. Our work and labour in connection with this Institute has, I may say with regard to all of us, been a labour of love, and it is a great satisfaction to us that our exertions have been, so far, so very successful. Much of that success is due to the zeal and efficiency of our Hon. Secretary, because without him the Council's work could not have been so satisfactorily carried out. (Applause.)

The PRESIDENT.—The next business before the meeting is the Annual Address, which Professor Duns has been so good as to prepare. Unfortunately he is not able to be present at the meeting, but the Rev. R. F. McLeod has kindly consented to read the Address for him.

STONE FOLK-LORE. By Professor DUNS, D.D., F.R.S.E., F.S.A.Scot., &c.

STUDENTS of the literature of any one great department of scientific thought must often have noticed the commanding influence of the introduction of new terms. As the knowledge of phenomena increases, and additional facts are discovered, long and well-known truths assume new relations, both among themselves and with respect to others still fresh, but, it may be, little known. How are the new relations to be brought into line both with the new and the old facts? The process is not so simple as may at first appear. It implies the differentiation of closely related but not identical forms, and, if the integration sought for is to be of use, the power to assign these to groups in themselves well defined, and yet suggestive of the resemblances, and the differences, among the members of each group. Observation, induction, inference lead to generalization, and this finds expression in a characteristic new term. This method and its outcome have been influential both in the science and the unscience of all time. Indeed, the distinction between the true and the false is not to be sought for in defective method but in the mixed minor premise. Syntheses warranted only by facts are vitiated by being neither factful nor fanciful, but a blending of both.* The terms nature, physics, metaphysics, are old-world terms; physiology and psychology, in their present scope, are more recent; biology and sociology are more recent still. Many like instances might be given, but, as having a special bearing on the subject of the present paper, other two may be named—anthropology and archæology; the latter, however, is only the archaic aspect of the former, but each term

* The author, on being asked to look over the lines referred to by the Lord Chancellor (Lord Halsbury), replied: "I am not going into the mixed minor premise: what I have in view is the practice of blending traditional superstitions with historical facts, and assigning them the same value as data for generalizations."—ED.

represents a wide and often a highly complex generalization, helpful to thinkers as keeping a variety of subjects together, each of which, nevertheless, lays claims to separate and independent discussion. For example, archaic anthropology embraces among its several leading subjects one of which little can be made, if the relations of each to all are not recognised. I refer to "Folk-Lore," which, historically, is but of yesterday. When first used, the term was limited to the consideration of the traditional superstitions, and the social or domestic customs, met with chiefly among the illiterate scattered over rural districts, or prevalent in country towns far from centres of thought, action, and enterprise. And this was before the "schoolmaster was abroad," and the policeman present in these out-of-the-way localities. When even the feeble flickering of the oil lamp did not break the darkness, or make it visible in well-peopled places. Thus there was no chance of the weird, clever ghost being caught, or the would-be witch burned, or the man who met *himself* face to face when strolling at twilight in his own garden, being treated as a lunatic.

The folk-lore sphere is now greatly widened. Though so recently as 1846 it was no more than a subordinate branch of archæology, it now claims for itself a place and importance equal to that usually assigned to anthropology and archæology themselves. "It has now been extended to include the whole vast background of popular thought, feeling, and usage, out of which, and in contrast to which, have been developed all the individual products of human activity which go to make up what is called history. As the meaning of folk-lore has expanded, so the relations of the science that studies its manifestations have extended, till it has been correlated with all the groups of organized studies that deal with the past of Man. Folk-lore, in its investigations into popular belief, gives aid to, and receives help from the cognate studies of Mythology and Comparative Religion. Folk-lore, in investigating popular usages, often finds traces of past institutions which are being studied by the new and vigorous science of Institutional Archæology. And in studying the literature of the people—the ballad, the fairy-tale, the proverb, the chap book—folk-lore has often to resort for elucidation to the products of individual artistic creation which go to form literature properly so called, especially in that mediæval phase of it that is known as romance. And, finally, as it has been found by practice

that much of folk-lore that eludes explanation from the thoughts and customs of civilized peoples finds ready elucidation from savage practice and belief folk-lore has here points of contact with ethnography and anthropology."* The claims and scope of this very recent branch of archæological science could not be better indicated than in this quotation from the editorial prefatory notes to the first volume of the *New Review*, and subsequent volumes are crowded with illustrative instances. Popular superstitions and usages, State institutions of every description, legends of savagedom—as yet unmixed with those of early civilizations, or uninjured by European thought, or only beginning to be spoiled by the reflex influences of true science and modern progress — mythologies, religion, natural and revealed, and the multitude of highly complex, difficult, and often vital questions associated with these are all held to lie within the folk-lore field.

> "Whate'er the eastern Magi sought,
> Or Orpheus sung, or Hermes taught,
> Whate'er Confucius would inspire,
> Or Zoroaster's mystic fire ;
> The symbols that Pythagoras drew,
> The wisdom the great Plato knew ;
> What Socrates debating proved,
> Or Epictetus lived and loved ;
> The sacred fire of saint and sage,
> Through every clime, in every age,
> In [Folk-lore's] wondrous page we view,
> Discovered and revealed anew.
> * * * *
> Ten thousand depths it can explore,
> Ten thousand truths unknown before !"

These lines have no reference to the recent Quarterly. They trumpet the praises of an early seventeenth century folk-lore precursor (*prodromos*), who, in his "*Signatura Rerum*," demonstrated, after his characteristic fashion, "the beginning, ruin, and cure of all things." That which hath been will be. The *Signatura* of Jacob Behmen (1620) was, *at his day*, only a revival of the ancient medical "theory of signatures," much in vogue two centuries previously, when its application was confined to plants, but Behmen found room in it for all things, especially in their beginnings. And *De Origine*—research into origins—has still a fascination for many to whom a differentiated fundamental notion, if it can be captured, is

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* "Folk Lore," *Quarterly Review*, Vol. I., p. 1, 1890.

precious as the *prima materia*, or the *luna albit philosophorum*—white gold—was to the alchemyst. But it is just here where some thinkers overstep the lines and limits of science. The question of origin is outside of its scope. True! the greed after "goold in goupens,"* and the thirst after life's elixir which animated the alchemysts did much to make mineralogy a true science, and to foreshadow the greatest and the grandest scientific generalization of recent time—geology itself. In this paper, however, we have chiefly to do with the popular notions of things, and only with a single and very limited set of these: those, namely, associated with some artificial and some natural shapes or forms of stone under the term Stone Folklore.

From earliest times men have looked out on nature from one or other of two points of view. To some it was a revelation, to others a mystery. To the former its phenomena were facts waiting for interpretation. To the latter they were suggestive of unknowable living presences, to them as real as the facts to the true student. Science was the outcome of the one attitude, superstition of the other. But in all cases to credit superstition to ignorance, and to separate credulity from knowledge is to miss the true state of the question. Like the trees of the forest, the tree of knowledge often bears, what the woodsman calls, "sports," aliens, essentially and historically, yet belonging to the individuality of the tree, and nourished by the very sap which gives strength to the true branches. Instances are numerous as the withered leaves on evergreens at midsummer. What a list might be given of men with this complex individuality—wisdom and credulity—among the alchemysts and mystics, and even among the crowd of recent believers in spiritualism! This association of the dreams of a sort of supernaturalism with stones rare or grotesque, or with something suggestive of human qualities, finds concrete expression in fetishism. Traced towards its origin, perhaps it is only pantheism broken into myriads of loose fragments, which stand very much in the same relation to that great dream of many great souls, that the numberless grains of sand of the desert do to the solid freestone of the quarry. Intellectual workers in many lands are diligently and carefully gathering up the fragments, trying to generalize them, and to assign

* Gold in abundance (handfuls).

them a definite place in the sum of human knowledge—historical, philosophical, scientific. What Portland cement does for broken stones and gravel by moulding them into solid blocks for useful purposes, folklore savants are endeavouring to do for floating traditions in every department of thought, and also for their numberless variants. And they think something certain and sure *has* been already done, but they do not seem to know how little that is! The whole subject is full of interest because it has so much of man's past in it. Moreover, even the mere ascription of imaginary qualities to natural objects may lead to the discovery of much in them which is true and useful. The British Pharmacopœia is a witness to this as to rare and abnormal forms both of stones, of plants, and of animals.

As to stone folk-lore, I distinguish between man's mark in the stone, and the influence of the unusual shape, or the imaginary quality of the stone on man. The former falls to the student of archæology, as philological or as artistic, or as both. The folklore field proper includes all varieties of the latter. My apology for the foregoing rambling remarks is that they fit the subject of this paper, which is not the philosophy of Folklore but some illustrative instances of it in the department of mineralogy. The illustrations might be brought together under two heads, (1) the Natural History Group, and (2) the Superstitions Group, but, as several might have a place in both of these, it will save repetition to keep the instances separate.

1. The Eagle-Stone (*Ætites* of some) is believed to be found only in the nest of the golden eagle, and to have been put there by the noble bird itself, to facilitate the hatching of the young, and to moderate the violent heat in the breast of the incubating female. The stone is described as tapering at both ends, hollow, and enclosing a smaller stone which rattles when shaken. When the mineralogist turned his light on the stones said to have been taken from the eagle's nest, they were shown to be common wherever ironstone occurs, and are simply clay ironstone nodules, consisting of a hard crust, with a loose part at the centre made free by shrinkage. Two hundred years ago this stone was credited with extraordinary virtues. It was the *lapis pregnans* of Sir Robert Sibbald (1694)—"the King's physician"—who ascribed to it power to influence not only the chick *in ovo*, but also the possibility of the human embryo. The shape of the free *nucleus* was held to indicate sex—male or female, or

neuter. Credulity dies hard. Doubts touching the alleged virtue of the eagle-stone did not begin to arise till the middle of the eighteenth century, and it was not till the beginning of the nineteenth that all its imaginary and semi-miraculous qualities fell into disrepute.

2. THE ADDER-STONE is of ancient as well as comparatively modern repute. Pliny refers to its occurrence in Gaul as an egg (*ovum anguinum*) of many virtues. The supposed mode of its formation differed in different countries, but in each it was associated with the adder. It was long held that at the season when adders slough, many meet in one place, rarely seen by man, when the largest casts its skin in the form of a perfect tube, through which the others quickly wriggle, each one leaving a coating of slime in it. This, in drying, assumes a globular shape with a hole in the centre, and thus was formed the druidical bead of the old antiquaries; the adder stone of the vulgar; the Roman glass bead of others. It was wont to be worn as a charm against evil spirits, as an amulet against, or for the cure of, whooping cough, as a remedy for inflammation of the eyes, and as an effective help in the cutting of the child's first set of teeth! The prevalence of such notions so recently as the close of last century seems to show that the believers in the adder stone's virtues were ignorant of the process of bead making, so far at least as concerned the production of the twisting ornament by the mode in which the colours are laid on.

3. THE SNAKE-STONE has a place in literature which will never allow the popular belief to be forgotten. The reference to it in Scott's *Marmion* makes this good :—

> "Whitby's nuns exulting told
> How of thousand snakes each one
> Was changed into a coil of stone
> When holy Hilda prayed.
> Themselves within their holy ground
> These stony folds had often found."

The range of the snake-stone belief is very wide, and is determined by the distribution of the rocks in which the so-called fossilized snakes occur. They are not limited to the Ammonites of the Whitby Lias, but are met with in each of the great divisions of the Mesozoic period, from the Trias to the Chalk. But there are also Palæozoic forms which have given rise to corresponding fancies, and to which medicinal virtues, protective or curative, have been ascribed — for example *Bellerophon*, *Euomphalus*, *Lituites*,

&c. Thirty years ago specimens of these were frequently brought to me by miners as "petrified snakes"—"lucky stanes," "guid against chincough," and "other ailings." When their nature was explained and thanks given for the gift, the question was several times put, "what for then dae ye keep them?" But Scottish miners are not alone in credulity. "In a small collection of petrifactions," says a Danish bishop, "is a snake as thick as a finger, worked with one side pressed into pyrites, whence it received a bright copper colour, which I trace to the Deluge!" "Whitby's thousand snakes" are simply fossilized specimens of cephalopodous mollusca.

4. BEAD-STONE is also named St. Cuthbert's beads, Fairy beads, Limestone beads, and St. Boniface's money (*Nummuli Sancti Bonifacii*), they are the ring-like transverse sections of the so-called vertical column of stalked Echinoderms, the well-known *Encrinites* of the palæontologists, which occur in such immense numbers in some limestones as to give their name to them—Encrinal Limestones. The palæontological and recent history of these forms is one of peculiar interest. It introduces us to biological facts more wonderful by far than all the imaginary qualities ascribed to the Encrinite by the illiterate and superstitious. But it is folk and not science-lore we have now to deal with. Scott seldom missed any aspects of the former, current in the districts associated with his poems. Thus his reference to St. Cuthbert's beads—

> "But fain St. Hilda's maids would learn
> If on a rock by Landisfearn
> St. Cuthbert sits and toils to frame
> The sea-born beads which bear his name."

His reference to the "thousand snakes" has been noticed. He seems to have believed in the "snake legend," but did not well know what to make of the "beads." In his notes to *Marmion* he speaks of "the relics of snakes, which are still found about the rocks, and are termed by Protestant (!) fossilists, Ammonitæ," but referring to the beads, he uses the term under which old writers hid their ignorance, "these *Entrochi* are found among the rocks of Holy Island." In localities where the beads occur, they are still in great favour with children who make necklaces of them, or, in mimic shop-keeping use them as money. The charm associated with them, when they were hung to the cradle's

head to protect the babe from the more than kind good folk —the fairies—appears to be now forgotten.

5. THUNDERBOLT AND ELF-SHOT STONES introduce us to another folk-lore element than that chiefly before us in the instances given above. In them ignorance of their natural characteristics found a footing for superstition, but the so-called thunderbolts and elf-shots bear marks of design which ignorance ascribes to supernatural art. The celts, or stone-axes of the Stone Age, and in districts where Jurassic strata occur, belemnites—the fossilized homologous part of the present sepia and cuttlefish—were regarded as thunderbolts. The flint arrow heads of the same age were believed to be weapons used by evil-disposed fairies against domestic animals—causing cattle disease, and more frequently taking the milk away from cows. The cure was homœopathic—*similia similibus curantur*. The wise woman of the district ordered the murrain stricken animals to be touched by the elf-shot, and the cow with the shrunk and milkless udder to be made to drink clear water out of a vessel at the bottom of which it could see the thrown-in elf-shot. If the cures failed, the failure was traced to want of faith in the agent. The superstition is not dead. A place might be named in an out-of-the-way mountainous district where a celt is kept carefully wrapped up in cloth that had never been used for any other purpose, and is wont to be employed whenever disease appears among the cattle. Belief in its virtue has been gradually declining, and it is now trusted only by those bordering on the threescore years and ten, one of whom recently pointed to its neglect as a proof of the depravity of the age!

6. FAIRY-STONES are fantastically shaped forms met with in alluvial clays. They are the claystone concretions of geology, and the fairy-art products of folk-lore. They are interesting from the point of view both of science and superstition. When subjected to scientific examination they suggest several questions of some importance in physical geology and chemical mineralogy, especially such as deal with mineral secretion, concretionary action, chemical aggregation, and the like. We are in the habit of limiting the term conglomerate to consolidated mineral masses consisting of pebbles of various kinds, generally rounded, and differing from the paste or matrix in which they are met with. The term concretion, again, usually indicates the outcome of a tendency among many mechanically mixed, but apparently

homogeneous substances to separate from one another and assume the form of nodules, distinct in themselves, though united in the mass. Thus regarded, concretionary action might be held equal to chemical aggregation. In this case the differentiation of the forms now under this notice—that is their comparative isolation from the mass in which they occur—depends on the presence of elements prone to molecular coalescence, which, while in one sense they withdraw from the mass, yet in doing so, carry with them parts of the mass, and thus do not often differ in colour from the mass itself. When the concretion consists mainly of lime they are named calcareous; of silica, siliceous; of clay, argillaceous or claystone concretions. The prevailing element gives the name to the series.

These fantastic forms have for a long time had the attention of geologists, and for a far longer time the superstitious wonder of the ignorant. Indeed, the attempts to account for their origin and shapes alone constitutes a most attractive chapter in the history of physical geology. The *Tophus ludus* of Linnæus was a concretion of this sort. David Ure of Rutherglen, 1793, first called the attention of British geologists to them. About sixty years ago Alexander Brogniart devoted an able essay to their formation and that of agates—*Sur les orbicules siliceux*. Twenty years later Ehrenberg published a paper on "The forms assumed by uncrystallized mineral substances called kidneys, Imatru-stones and claystones," all of which he included in the term "*Morpholites*." The Imatru stones had previously been described as an extinct family of mollusca. The late President Hitchcock, of Amherst, Massachusetts, gives them a prominent place in his great work on the Geology of Vermont. Up to Hitchcock's time little notice had been taken of them in Britain. Since then, however, reference is made to them in most geological handbooks. Some years ago the attention of the late Sir David Brewster was turned to them, and he contributed a paper, "On the fairy stones found in the Elwand water near Melrose," to the Proceedings of the Royal Society of Edinburgh (vol. v.). Sir David thought that they had been formed by the dropping of water containing the matter of which they are composed. I agree with Hitchcock on this point when he says, "Nothing can be more absurd than to impute their shapes to the mechanical action of water." No doubt they are produced chemically in clay made plastic by water and holding in solution the carbonate of lime by which, as clay-

stones, they are cemented. But this sheds no light on the great variety of shapes they assume, a variety which really underlies the ascription to them of supernatural origin—fairy art products! They occur as spheres, spheroids, oblate and prolate spheroids, flattened spheres with circular rings, flattened spheres with flattened rings, laminæ or plates, circular plates formed by concentric rings, shapes suggestive of the human figure, or of conventional impossible animals. Specimens of these and of many more are represented in my own collection. But what of their formation? It seems to me that the presence in plaster clay of such substances as silica, carbonate of lime, carbonate of magnesia, or iron, or manganese protoxides which have strong tendencies to aggregation—to coalescence, like coming to like—the shape of the position in which they have room to associate will determine that of the concretions themselves, and account for their fantastic forms. It would be easy enough for the credulous, who credited art experts among the fairies with power to make glass slippers which would fit only one human being in all the world, and gauzy dresses gleaming with gold or silver threads for favourite maidens, to credit "prentice hands" among them with the manufacture of these odd-shaped forms of worthless clay!

7. AMULET-STONES were stones arbitrarily held to possess medicinal virtues, and were worn about the person as a cure for, or a safeguard against, disease originating either in known or, specially, unknown causes. Pliny uses the word amulet in this sense,—*infantibus adalligari amuleti ratione prodest.* Thus too as to the medicinal virtue of amber, the famous chrysolectron of the ancients and still worn as an amulet,—*Hoc collo adalligatum, mederi febribus et morbis; triticum cum melle et rosaceo, aurium vitiis: et si cum melle Attico conteratur oculorum quoque obscuratibus* (*Hist. Nat. C.* XXXVII. *c.* 12). The process of association by which imaginary virtues are ascribed to certain shapes and certain colours of stone, waits for explanation. A bit of limestone found on the sea shore pierced by *Pholas* or *Saxicava*—boring mollusca—is often met with in country districts hung up in stables or byres as a charm. Why? A ring stone of amethyst is held to beguile the wearer from temptations to drunkenness. Why? One of green jasper is believed to ward off the discomforts of indigestion. Why? The range of the stone charm-myth is worldwide. Instances are named in most books of travel, and the superstition is not confined to savage-

dom. It is met with in the very heart of modern civilization, testifying how deep its roots are in human nature. Many are in the habit of relegating these popular beliefs to a remote past. But so recently as 1826 a book was published with the title "The secrets of nature, for the benefit of fishermen and farm servants," containing references to the remarkable virtues in stones with which these classes were held to be well acquainted, but which, I confess, I have not been able to identify. Two or three may be mentioned:—The *Maynetic Stone* (not magnetic iron ore) if reduced to a powder and thrown into the fire when the household are asleep the sleepers will awake in horror and rush out of the dwelling. The *Ophthalmic Stone* if worn in the breast wrapped in a laurel leaf will make the wearer invisible. The *Medor Stone*, black or green, if steeped in water will skin the hand, but when dried and carefully applied externally will cure the gout. The *Armaltus Stone* was an antidote against poison. The *Quirim Stone* found only in the Piet's (Magpie's) nest if slipped under the pillow of a person believed to be guilty of any atrocious acts, or great crime, will lead him to tell it aloud in his dreams. The book is said to have had a wide circulation among the classes for whom it was written.

In most of the foregoing notes an attempt is made to bring scientific facts alongside of folk-lore notions, and to find the explanation of the latter in the people's ignorance of the phenomena of Nature and the facts of science. Thus far the state of the question is clear, and unambiguous. But when we meet the superstitious notions actively and influentially current in an age noted above all others for its widespread scientific knowledge of nature, complex elements are introduced which make the explanation more difficult. A recent writer says—"In the present day amulets, though by no means extinct, have fallen into disrepute," and he ascribes this to the progress of science and of the philosophic spirit. I rather think that the roots of superstition which we are warranted to trace to the inborn seeking for a sign, the innate desire that ever hankers after the supernatural, lie in depths of man's nature which neither science nor philosophy can reach. That the spread of education and the increase of the knowledge of nature have done something to counteract the baneful influences of superstition no thinker can doubt, but neither can he doubt that wide and accurate scientific attainments are not necessarily the death of superstition. Moral elements

emerge which can only be morally dealt with, and if it can be shown that superstition can get foothold among men of modern culture, we will cease to wonder at its influence over multitudes of the population outside of that culture. Old wives' fables are not the property of old women alone. As we have already said, they were the very *élite* of society who, in the olden time, believed in the *Lapis philosophorum* and the *Elixir vitæ*. Yet so little was a place among the *élite* to be relied on as a guarantee for consistent action, men were found among them who did not scruple to put feeble women to the torture when charged with bewitching a neighbour's cow, or holding converse with Satan in the guise of a black cat.

There are other stones whose colour more than their shape has attracted popular attention and secured for them a place in wonderland. They are, however, for good reasons to be kept separate from those already looked at. In "Adamnan's Life of St. Columba, (A.D. 697)," there are some curious references to these, of much interest both to the mineralogist and the student of folk-lore, references, moreover, which connect them with the religious history of these early times. Adamnan mentions a blue stone, a red stone, a black stone, and a white stone, severally noted for remarkable virtues. A full account of these would form a curious chapter in the history of this department. We refer to the last named only, the white stone. "When in the country of the Picts, St. Columba," says Adamnan, "took a white stone from the river (Ness?) and blessed it for the working of certain cures; and that stone, contrary to nature, floated like an apple when placed in the water. This divine miracle was wrought in the presence of King Brude and his household." In another place we are told that the saint having left the palace of the king, "proceeded to the river Ness; from this stream he took a white pebble and showing it to the company said to them, 'Behold this white pebble by which God will effect the cure of many diseases among the heathen nation.'" We learn afterwards that when the Druid Briachan, who had fallen under the displeasure of the saint, became sick, the king sent Columba to cure him, and this was done by Briachan drinking the water in which the stone was swimming. I attach no weight to the miracle-element introduced here. It forms a considerable part in Adamnan's biography of the saint. But as our present task is historical and illustrative rather than

apologetic we need only say that every so-called miracle recorded by the biographer can be explained apart altogether from supernatural influences. What we wish at present is to concentrate attention on the colour—white—because it not only suggests a form of stone folk-lore not yet referred to, but also because it sheds some light on a well known passage of Holy Scripture.

In many widely separated districts the white stone is associated with sepulture. We have met with it in North Wales churchyards, in burial-places of Lowland Scotland, and in lonely spots of the Outer Hebrides. Sometimes the grave is surrounded by a single or a double row of snow-white quartz pebbles; often a few are placed at the head and foot of the grave, and occasionally a single stone lies at the head only. Most of the stones are rounded and smooth, thus the rains keep their tops free from lichens, and the pebbles ever suggest

"The white of purity, surpassing snow,"

and, by many, this kind of memorial is valued more than that of flowers because

"Full soon the canker death eats up the plant."

In one instance that came under my notice the white stones were deposited *in* the grave not *on* it. When one of several "half-length" stone cists was laid bare in a sandhill it contained four pebbles of quartz, whose position seemed to indicate that one had been placed at the head, another at the feet, and one under each shoulder. Ure (1793), describing a section made through a *tumulus*, says that twenty-five urns of coarse clay, rudely formed, full of earth and human bones, were met with. "They were placed with their mouths undermost upon flat stones, and a piece of white quartz was found in the centre of each. These pebbles were larger or smaller, in proportion to the dimensions of the several urns to which they belonged." Some time ago Sir Arthur Mitchell read a suggestive paper before the Society of Antiquaries of Scotland,—"On the occurrence of white quartz pebbles in chambers and cists." On visiting an old burial-ground at Kilmalew, near Inverary, he found that eight of the graves had quartz pebbles on them. All these had been recently opened. Thus the old practice had not died out. Sir Arthur asks, "Is the modern practice a survival of a Stone Age custom, knowingly or unknowingly?

Was there aught of symbolism underlying it? Or is its presence to be traced to the pleasure which the survivors have in decorating the graves of the beloved dead?" At the close of his paper, Sir Arthur refers to Revelation II., 17. The reference sets the subject in the heart of symbolism. Here I have no doubt, as in many other instances, Christianity appropriates a heathen usage, and makes it a channel through which a great Christian truth finds expression. Ovid traces the usage back to times long anterior to his own:—

> Mos erat antiquis neveis atrisque lapillis
> His damnare reos, illis absolvere culpa.

The following (16th century) rendering of these lines is truer than elegant:—

> "Sentence was given in ancient times
> By stones, or black or white,
> The first convicted men of crimes,
> The second absolved them quite."

"I will give him a white stone, and in the stone a new name written, which no man knoweth, saving he that receiveth it," (Rev. II., 17). 'The ancients gave a white stone as a token of victory and freedom; so will I give myself to him that overcometh, I in him and he in me; I will give him to know what can be known with absolute certainty by himself alone.' And still deeper and grander truths come to the front as we dwell on the promise, but to do more than hint at them, and that only with reserve, would be to leave the subject proper of this paper.

To the student of stone folk-lore the foregoing pages can be little more than is an imperfect plotting of a small portion of a very wide area to the surveying engineer. Were we to take in the whole field we would find corners of superstition and lines of credulity suggestive of almost numberless illustrative instances. The history of chemistry, ethnology, archæology proper, and even biblical interpretation and exposition is crowded with them. Moreover, the historical aspect raises one of the most important and interesting questions connected with the whole folk-lore subject, namely, the question of the value of the recent "theory and method of survivals."

The Right Hon. Lord Halsbury, Lord High Chancellor (who was cheered on rising), said: Sir Gabriel, ladies and gentlemen.—The motion I have to move is one about which I have no difficulty, for I do not suppose that there is any one present who is not prepared to give their best thanks to Professor Duns for the Annual Address that has been delivered, and our thanks are also due, in a very high degree, to the gentleman who has been good enough to read it. (Applause.) I must say the unhesitating manner in which he read those awfully long words would have startled a great many readers. I cannot help being reminded of a story that I think was told by Lord Bacon, of a certain great occasion, when the Greeks assembled together. A foreign ambassador (for they had such things in those days) was invited in order that he might hear the wise observations to be made and carry them back to his prince. After a great number of wise men had spoken, there was one gentleman who said nothing, and the ambassador looked on with curiosity and impatience to know what would come from him, and when he appealed to him the man said "go back to your rulers and tell them there was one Greek who knew how to hold his tongue." I am afraid I have forfeited that merit already—and yet, I know not what to say, because with reference to the subject of this Address—Stone Folk Lore—all it means and all its history—I do not know anything. Perhaps that is not a reason, in these days, why I should not talk a great deal about it.

There is one passage that caught my eye upon which, inasmuch as criticism is the very essence of this Society (and we do not allow anything to pass without criticising it if we have something to say), I will say a few words. It is, I believe, the great virtue of our meetings that everybody is obliged to explain what he means—if he *can*. Now I find a little difficulty in following the argument by which the very learned paper is introduced. On his first page I find the writer says "the distinction between the true and the false is not to be sought for in defective method, but in the mixed minor premise" and he goes on to say, "Syntheses warranted only by facts are vitiated by being neither factful nor fanciful, but a blending of both." I am not quite certain that I understand that. But this I will say, that I think there is a blending of two totally different theories

in the argument itself so far as I read it.* We have been in the habit, I think, of undervaluing the older method. The Aristotelian logical philosophy was perhaps, in its earlier days, made a great deal more of than it deserved, because it was misappropriated; but in these later days I am not quite certain that we should not learn a good deal from it, and it arises, I think, from the fact that confusion is supposed to exist between the modes in which we investigate truth. Modern science, the exact microscopic, intense examination of nature and natural phenomena lies in the region of examination of facts and not in reasoning at all; but the power of reasoning disciplines the mind which is subjected to the art of reasoning and that is invaluable, I believe, because when we have ascertained our facts we need not confuse our minor premise at all. We may find out what the facts are first, and then construct our premises and from them we shall learn, by a later application of philosophy, how to deduce further conclusions which may, perhaps, be inherent in them, but which will not be seen until we have applied the logical touch-stone to see where the truth is; and for that reason I confess I regard the theory on which this investigation starts with a little doubt.

Sir William Hamilton himself, I think, has pointed out wherein the former mode of investigation differs from that of later times, and when we apply the logical process to that which alone is the proper object, the form of thought and not the investigation of facts, I believe we shall then be able to learn something from it and attribute to it its true value. But with reference to the later form of investigation—the mode in which we attack nature on every side and examine it and pull it to pieces, I think we may learn something from Lord Bacon, who tells† us that we should exorcise, if we can, the idols of the tribe, the den, the market, and the theatre, and if we do that (*i.e.*, strive to reduce the human mind to a clear mirror not overlaid with these idle superstitions), we shall then, perhaps, be in a better position to discuss such a paper as this, when we quite understand all that it means, which some of us (I speak for myself) do not at present;

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* See note to first page of the Address.—Ed.

† *Novum Organon*, I., § xxxix.—Ed.

but nevertheless I think we shall recognize the fact that this is a very interesting Address and no doubt a great deal may be learnt hereafter from it. I observe with great satisfaction that the author of it indicates that it is only a sketch. Let us hope that hereafter he will fill it up and make a complete picture. In the meantime I have much pleasure in moving "that the hearty thanks of this meeting be given to Professor Duns for his (the Annual) Address and to the reader for the part he has been good enough to take, and also to the authors of the papers read during the past session." (Applause.)

Sir Joseph Fayrer, M.D., K.C.S.I., F.R.S.—Mr. President, my lord, ladies and gentlemen; I have very great pleasure in seconding the resolution that has just been so eloquently proposed by the noble lord who has just sat down. I wish he had not criticised the Address so fully—in short that he would have left me something to say. It would not be quite fair I think, though, to attempt to criticise an essay of this kind summarily, having only had the opportunity of hearing it, and you know how transient the impression is that is made by simply hearing a paper read. Such an Address as this requires to be studied before one attempts to criticise, and I look on it as one of great interest. I think it quite comes within the scope of the class of subjects contemplated by this Institute. It is philosophic, archæological and anthropological, and is an excellent Address. In regard to the myths, traditions and superstitions that have been related to us, I may say that I have spent the best part of my life in a country with hundreds of millions of people of ancient civilisation whose ancestors were mathematicians and philosophers when our own people were painted savages—people who believe to this moment that such a stone as one of those you have heard described is capable, if applied to the bite of the most deadly snake, of preserving life. In this, as in other myths, you may have some substratum of the elements of truth—not from the point of view which they take, but from the point of view which those who have read papers before the Victoria Institute and have followed the line of thought and mental devolopment, endorsed by this Institute will understand. This stone is simply an absorbent—a piece of charred bone, and it has the property of absorbing by capillary attraction, never sufficiently in bad cases, but in more slight ones, it has given rise to the idea that it is capable of saving life in all cases. That idea is rapidly passing away and no doubt,

like others, that you have heard the history of to-day, will cease to exist. I have much pleasure in seconding the vote of thanks.

The resolution was then carried.

Professor E. Hull, LL.D., F.R.S.—My lord, ladies and gentlemen. There is one resolution in which I am sure we shall all concur and which I have the honour and pleasure of moving viz.: that the hearty thanks of the meeting be presented to our President, Sir Geo. Gabriel Stokes (applause). It is a matter of great importance to an Institute such as this to have one at its head who stands amongst the first of the philosophical investigators of our time. No one is second to Sir G. Stokes in mathematical and philosophical investigation, and it is matter for great congratulation and gratification to ourselves that we secured his services as President of the Institute. He is not one of those Presidents who accepts the honour without the responsibility and work, and it is really a matter which we are bound to consider as a very great kindness on his part that, although his residence is at the University of Cambridge, he is amongst us so very frequently at our ordinary meetings and almost always at our Annual gatherings. (Applause.)

Mr. J. Otonba Payne (Registrar of the Supreme Court of Lagos).—My lord, ladies and gentlemen. I beg to second the vote of thanks to the President, Sir George Gabriel Stokes, the greatest physical scientist in England, whose name is known far and wide.

The Resolution was duly carried.

The President.—I am much obliged to the proposer and seconder of this Resolution for the kindly and I may say too flattering terms in which they have spoken of myself. I am afraid that I cannot claim to have done very much for this Institute. I left this morning, my own University of Cambridge to be present at this meeting, but I am afraid I have not undertaken the work that is usually undertaken by the President of a Society like this, viz.: that of delivering the Annual Address. I am glad to think that there are others who are so well able to take my place in this respect.

The meeting then adjourned.

ORDINARY MEETING.*

D. Howard, Esq., D.L., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Members :—E. Stanley Mould Perowne, Esq., M.A., Middlesex ; Rev. H. B. Macartney, M.A., Australia.

Associates :—J. H. Bowman, Esq., United States ; H. M. Earle, Esq., M.R.C.S., L.R.C.P.L., India ; Rev. H. B. Hyde, M.A., India ; Rev. J. H. Mansfield, D.D., United States ; Prof. C. M. Mead, United States ; Rev. J. W. Nutt, M.A., United States ; Prof. A. S. Peake, Manchester ; Mrs. Arthur Brown, Kent.

A lecture on the "Physical Geology of the Globe" was delivered by Professor J. Logan Lobley, F.G.S. A brief discussion ensued, and the meeting was then adjourned.

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* 2nd of 30th Session.

ORDINARY MEETING.*

THE PRESIDENT, SIR G. G. STOKES, BART., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

ASSOCIATES :—Rev. H. E. Bevan, M.A., Cantab., Gresham Professor of Divinity, Middlesex ; Rev. G. B. R. Bousfield, B.A., Oxon, Middlesex.

The following paper was then read in the Author's unavoidable absence in the United States, by Mr. J. W. Slater, F.C.S., F.E.S.

THE MECHANICAL† CONCEPTION OF NATURE.

By GEORGE MACLOSKIE, D.Sc., LL.D., Professor of Biology in Princeton College, U.S.A.

MATTER and energy, which are distinct from and constantly acting upon each other, constitute, along with their various transformations, the stock-in-trade of physical science. The scientific investigator may not feel bound to go back of them, so as to ask whence they come and who gave them their qualities ; he has not to philosophize, but only to *speculate* about them, testing his speculations by observations of phenomena. He may speculate about matter having been at first in the shape of scattered atoms, subject to the pull of gravitation, this pull being "energy of position," and as the atoms came together into molecules, and ultimately into worlds, the energy of position was transformed into other forms of energy.

The leading generalization of science is that neither matter nor energy is alterable as to the total amount in existence. But this is qualified by the facts that whilst matter is constantly collecting into masses, all kinds of

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* 5th of 29th Session. Discussion completed November, 1895.

† The word "Mechanical" is understood as having the meaning of "Physical and Chemical."—G. M.

energy are changing into light or heat, and light and heat are being dissipated into space, with a tendency in the end to equalize the temperature of the universe. While energy is changing from one form to another, as while heat is passing between objects of unequal temperature, it may be made to do work which is measurable in units. A machine is a contrivance for getting some kind of motion or work out of it in the course of its transformations; and the mechanical conception of nature signifies that all the physical movements and phenomena of the universe have been derived from the interaction of the matter and energy which are its constituent factors.

This theory may be held in a theistic or an atheistical sense. The atheist may hold that the physical world is the only world, and that nothing else exists. The theist may hold that even admitting all that the mechanical theory asserts, there are ethical and orderly phenomena in nature, not coming under the measurable categories of matter or energy, yet proving that there is close to us an extra-physical world, with extra-physical beings, and that there is a God before all and over all.

Though energy is indestructible, its constant dissipation is a continual loss for all practical purposes. Fifty years ago scientific men supposed that the world had been going on at the present rate from everlasting. Lyell admired the "sublime" view of the past history of our globe being an eternal round of similar cycles of geological formations, never beginning and never to end; and this was the scientific view of cosmogony taught in the text-books and encyclopædias. But it is now omitted as belonging to exploded science; since it was shown by Thomson that our universe probably had a beginning, and with equal probability is moving towards its conclusion. This depends on the puzzling fact that whilst many processes in nature can be reversed, by calling in new energy from the environment, the mechanism of nature as a whole is not reversible. If a plant has its starch converted into sugar which is dissipated through the sap, it is able to reconvert the sugar and collect it again as starch. But why the cosmos is not a reversible machine we cannot tell. Clerk Maxwell somewhere suggests that as heat is only the general or average result of molecular movements, an inability to controvert the individual molecules puts the recovery of the general result beyond our reach. But how does it come that the process is never reversed

in nature, which has control over all the molecules? Why do we never see the dust of the graveyard come together into skin and flesh, and the bones reassemble, "bone to his bone," and the life and warmth return, so as to present us the living man, and the old becoming young again, reversing the process down to the ovum, and back through several generations? and why does our sun not receive back all the heat that it has scattered over space? This inverse process, though never observed, is, scientifically speaking, as easily conceivable as is the ordinary course.

The considerations which apply to the entire universe are with proper limitations applicable to any part, as to our earth or to the microcosm of our body.

The earth and our body are, in whole or in part, machines at work, and a great deal more, and the task of science is to watch movements, transformations, and developments, and to formulate them into "laws of nature." These laws appear to be absolutely uniform in their action, to amount in fact merely to transformations of energy. The objection taken to physical law in general and to the *uniformity of nature*, as being only working hypotheses and incapable of demonstration, is, we think, misleading. The uniform action of natural molecules and forces is the basis of all science and of all animal movements, and has never been known to play us false; so that the unchangeable behaviour of the laws of nature is as well established as human experience can establish anything. But a *uniformitarian* theory, holding that the sum total of activities in a particular place, as on the surface of the earth, has been the same at all times, is no part of science; such an assumption was helpful to Sir Charles Lyell, and within limits had an element of truth in it, but it very often led him astray. Most of the attacks on Christianity that profess to be based on the doctrine of uniformity of nature, really involve uniformitarianism.

The general outcome of scientific discovery has been not only to verify the uniform action of natural law, but to bring larger provinces of nature into the realm of mechanism; so that every new discovery becomes a contribution towards the mechanical theory. At the outset the search was random, often after what we now deem impossibilities. But though it never alighted on perpetual motion, or the elixir of life, or the philosopher's stone, it was not lost labour. One class of phenomena after another came to be understood relatively to their conditions and physical causes. The astrologers

sought for the horoscopes of their patrons, with exalted faith as to the superiority of the heavenly bodies above everything terrestrial. But to the surprise and disgust of some of them, their labours proved that the planets are not very different from the earth, and that celestial movements are mechanical; and they were compelled to settle down to observations and mathematics, as commonplace astronomers. When Newton investigated the forces that drive the machine, and Laplace finished off his *Mécanique Céleste* with his nebular theory, regarding the early development of the solar system as through a kind of physico-chemical embryology, and when their successors ascertained that gravitation-bonds and spectroscopic lines annex the movements and matter of distant stars to our system, the conquest of mechanism over the heavens was complete. At the same time the dreams of the alchemists by a singular metamorphosis grew into the science of chemistry. And chemistry has reduced all terrestrial things, living and dead, to the sway of its molecular and atomic sovereignty.

The stimulus given to inductive research by the writings of Francis Bacon, and by the establishment of the Philosophical Society in the time of the English Commonwealth, sent many inquirers to examine the minerals and rocks and the old puzzle of the fossils. There was a good deal of groping in the dark, and many theories arose to stir up controversy and at length to rock the cradle of infant geology. The sharp discussions attracted the public, who always enjoy seeing learned men set by the ears; the young science that excited so much controversy and feeling grew in favour, thriving on its difficulties; and when Lyell worked it out on the mechanical plan, discovering as Whewell has aptly said, "a new set of physical powers which we may call *geological dynamics*," men came to see that God's way of forming the stratified and other rocks of the earth's crust was by the employment of nature's machinery.

If for the moment we regard our world as devoid of living things, it is presented to us as mechanical throughout; its rocks, minerals, and chemical processes; its waters and meteorology; and the skies overhead with planets and suns. This starts the question whether such a world can bear testimony to God. Is the Psalmist justified when he declares that the heavens declare His glory? May we not suppose the order to be merely a result? What need is there of final causes where the efficient causes suffice? Recent writers on Theism

show a tendency to confine their arguments to the organic world, omitting the confessedly mechanical, which is by far the larger part of the universe; as if they supposed that a dead world is not sufficient to prove a living and intelligent God. But the order of the cosmos, the original characters and harmonies of the many millions and millions of atoms, and their relation to energy, their capacities for continuing in extraordinary yet definite and well regulated ways, all point to the necessity of going beyond them for their common origin. If the question of their origin does not properly belong to physical science, it certainly has an important place in philosophy and in the region of human faith, and thus has a claim on the attention of every man, and we cannot rest till we reach some unifying hypothesis, like that of the Divine Personality. Behind this hypothesis we cannot go, *since all genetic lines when traced* backward lead to it as the ultimate cause. The order of the universe may have been evolved according to Laplace's theory; but why were the molecules so constituted and so situated as to come naturally into this order? here the wisdom and will and power of the Author are all shown. So strong is this argument that all who reject it are compelled either to fall back on something which involves greater difficulties, or to evade the issue by pleading Agnosticism. The mechanical theory does not dispense with the argument for theism, any more than the successful working of a machine negatives its production by an inventor and its control by a superintendent. Even when it works imperfectly we may not in a dysteleological way argue from its defects that it had no inventor. Hence it does not exhaust the case to declare that a steam engine has a complete explanation of its going in its own mechanism, the fuel and water included, so that if these had all come together by accident it could still go, and if by similar accident rails were on the road, it could guide itself without having a horse in advance, not to pull it, but to direct its course, as (*fide* Lyell) the inventor of the locomotive at first proposed. Yet most surely the perfection of the mechanism would not debar us from endeavouring to find its inventor and director. It is objected that we should see the finger marks of the engineer in his work, and in rectifying its aberrations. But nobody has ever detected the finger marks by which our own mind governs our brain and our bodily organism; and it is improbable that God is more clumsy in His methods than is the spirit of man.

Francis E. Abbot condemns the application of the term *machine* to the cosmos, suggesting in its place the term *organism*, which he makes to be a machine and something more, the addition being that internal ends are provided for. We think that when regarded in this light, the term *organism* equally misses the mark; the physical world includes all organic nature as well as inorganic, and is higher than the highest of organisms, as the whole exceeds its greatest part. But here we meet the fact that there is a great deal of mechanical structure in the human as in any other organism, and that the diathesis of the contemporary scientific mind is to make us entirely mechanical. Living things dwell on a mechanical earth, are subject to gravitation, heat and cold, contain lime and carbon and much water, and thus have much community with their environment. For a long time it was supposed that the souls of plants and animals lifted them in a semi-miraculous way above natural laws, that their parts and powers were somehow created by the "vital force" within. Mental phenomena were supposed to have no connection with the body, save that of locality.

Another class of thinkers were bold enough to turn all the forms and functions of the body into machinery; to regard our frame as a large hydraulic machine with its accompaniments. Geometrical figures and algebraic formulæ were invented and applied to all organisms; to explain the parts of flowers, the arrangements of leaves, the forms of shells, the vertebræ of animals, the action of the heart, the affinities or homologies between distinct species. These speculations, though many of them now seem ridiculous, sustained the interest of students, and fostered research. The discovery of the embryological method of investigation, and of the method of representing heat by its mechanical equivalent, introduced a new order of work both in morphology and physiology. We have found that the plant manufactures food and stores up energy which it has got from the sunshine, a process that is probably mechanical, or at least physical, though it is not yet fully understood. The activities of our body are as completely explained by the food which we consume as is the work of a steam-engine by the coal and water which are its food. It is in this way ascertained that the daily food of an able-bodied man will give as much energy as, if converted into its weight-equivalent, would raise his body about nine miles high; this energy is used partly to keep up his temperature, replacing loss by radiation and evaporation, part of

it for moving the organs of his body, part of it in external work. We can, therefore, compare him economically with the efficiency of a steam-engine; it is only particular kinds of fuel that you can give to him; but a loaf of bread and a pound of beef will give you more work if used as food by man, than if you had applied them to heat the boiler of a small steam-engine. It is found that the activity of muscles and nerves is dependent on a supply of blood containing nutritious matter; that electrical phenomena are observed; and that the muscular activity probably depends on a series of explosions with oxidations, which may be compared to the action of a set of minute gas-engines. The sense-organs and nerves resemble very closely a system of telegraph wires with their terminal key-boards. The semicircular canals and organ of corti in the ear, though not yet fully explained, have a correlation with the wave-lengths of sound; and the eye includes in itself a whole system of optics, its lens giving fine exercise in determining focal lengths, with chromatic and circular aberrations and corrections, and the retina, with its rods and changing visual colours, suggesting that it must be an instantaneous photographic camera. The victory of the mechanical theory over these organs is only partial; but all the same it is significant.

As might be expected, theory at this part has run ahead of discovery. Some people venture to assert the mechanical (or at least chemical) evolution of life from dead matter. In ancient times it was the sceptics, like Lucretius, who denied spontaneous generation. Christian teachers were rather disposed to favour the idea of worms growing spontaneously within human beings, of frogs being within trunks of trees and rocks, of reptiles coming from the slime of the Nile. They have latterly come to oppose this doctrine, and the most advanced scientific investigators agree with them in their opposition. Professor Huxley, when before the British Association he threshed to death the theory of spontaneous generation, wound up with "an act of philosophical faith" that after all, life may have arisen spontaneously in early geological times.* This would help him against the theists who are continually tormenting him with their notions of the necessarily supernatural origin of life. Mechanism has not yet explained how life began, any more than how matter and energy began. So the theory is not entirely successful.

* Brit. Ass. Rep., 1870, p. lxxxiv.

But though life may have been of supernatural origin, its subsequent working and progress may be purely mechanical

Mr. Darwin's theory of the origin of species was an attempt assuming some simple vegetable and animal forms as a starting point, to derive from them in a mechanical way all the forms and functions of existing vegetable and animal life. Without going into details on this subject, whilst acknowledging both the strength and weakness of Darwin's theory, and that it assumes many factors which are not known to be mechanical, we have to face the fact that it has convinced the biologists, securing the general, though not the universal, assent of the only men who are able to deal with its arguments, many of whom would be glad enough to subvert it, if they only knew how. Though not entirely mechanical, it has unquestionably been a great gain for the mechanical conception of nature, just because the existence of many thousands of distinct species was formerly the chief argument on the other side.

Assuming evolution of species to be true, the irreducible cases are, besides the origin of matter and energy, and the general order of the universe, the origin of vegetable and animal life, of sensation and intelligence in animals, and, furthermore, of self-consciousness and the moral faculty in man. We must also provisionally regard the origin of the human body as among the unreduced cases; for although the evolution of man can be deductively obtained from the general theory, and its advocates appeal for confirmation to anatomy,* and although such a doctrine is readily reconcilable with the scripture narrative of man's creation, all attempts to find geological verifications have failed; so that, if man was evolved, the process must have been very rapid, or must have occurred in some region not yet explored; and, indeed, it is hardly conceivable that such a being as Haeckel's *Pithecanthropus* would be viable in the struggle for existence. The attempt to reduce *mind* to a mere synonym for the functions of the brain is based mainly on the relation between insanity and cerebral disease; and is supported in some degree by the localization of functions. But Professor John Fiske's argument appears to us conclusive, that our inability to turn

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* At the same time Topinard shows that it is impossible to derive man from the Quadrumana, and that it will be necessary on the hypothesis of his evolution to start from the lower level of the Lemurs. (*L'Homme dans La Nature*, ch. xxii.)

thought into exact quantitative equivalents of mechanical force negatives its homology with merely physiological functions.* Bain's rejoinder that we cannot reduce to such equivalents a man's constitutional vigour fails, because this vigour is the complex result of the working of all the organs and tissues, and its component factors may be measurable. Whilst the weight of evidence appears to negative the purely physiological explanation of mind, we should not only be tolerant of, but encourage investigations that look in a different direction, as we are indebted to them for large accessions to our knowledge of physiology.

The so-called "organic compounds" were at one time supposed to be obtainable only from living objects, but now many of them can be artificially prepared, some to economic profit. The study of "physiological psychology," that is, of the functions of the brain from the physiological side, has already proved valuable. Ryder has shown that the calcification of bone is comparable with the calcifications around encysted trichinæ, and is more of a physical process (depending on the behaviour of calcareous salts in colloids), than exclusively vital. Bütschli has found the movements of living amœbæ to be imitable by olive oil kept in moderately warm water, from which it is inferred that the movements of protoplasm are partly or exclusively physical. It is also now known that the non-coagulation of the blood sucked in by a leech is a physical phenomenon, which can be imitated by keeping blood in vessels lined with oil. These attempts to approach the problem of life and of mind from the chemico-physical side mark the limits of the mechanical conception of nature as actually established. There has long time existed deep apprehension among Christians regarding the tendency of this kind of science. What we have now to face is not a remote risk, but a state of facts. If the mechanical theory means ruin to faith, then the deluge is upon us, only a few fragments (very important ones indeed) remaining to carry us to land. Now it must be conceded that mechanism has often been associated with atheistic materialism, and that atheists have welcomed such mechanical explanations as promised to explain the world without a God. The same consideration has led Christians to fight shy of Astronomy, Geology, Physiology, and recent advances in Biology, and to discountenance investigations and theories which promised

* *Popular Science Monthly* (New York), Sept., 1891.

to explain the world too well, lest science should explain away our God, and leave us ignorant where to find Him. Even those who are liberal enough to concede the consistency of mechanicism and theism, fear the effect of the new science on our faith in the Bible, and especially in the great miracle of the resurrection of Jesus Christ; a fear which has been intensified by attempts to account for all the miracles as natural occurrences or unfounded traditions. But whatever view may be held of the origin of mind, whether we regard it as a derivate under Divine direction from the material organism, or as a substance primitively created apart from matter, we are compelled by its actual phenomena to assign to it a certain measure of independent activity as to the moral quality though not as to the physiological quantivalence of cerebral action. We presume that the cerebration of the evil disposed is as great quantitatively as that of the well disposed, and that the cerebration of an idiot involves as much expenditure of blood and brain-tissue as that of Newton; but there are moral and intellectual scales by which brain-work must be weighed, independently of its chemico-physical value. In man as well as beast there is much of the mere machine or automaton; and some have gone so far as to accord to the lower animals some measure of intelligence and will and often of "social virtues" which are found more liberally in ourselves. There is no special evidence of a soul in the lower animals any more than in plants; but in consideration of man's moral endowments and aspirations, the science which has invented ether as a vehicle of light, regarding it as a specially active form of matter, ought not, even on a mechanical theory of mind, to reject the hypothesis of something that shall carry our personal identity, with our faith and our joys, into Heaven. This is a subject beyond the scope of inductive science; but there seems no ground for fear that our hopes of immortality are at stake, if we accept the mechanical concept in its entirety.

The problem of miracles is frequently brought into the case, though not strictly pertinent. We do not think that any conceivable amount of evidence would convince us that a man rose from the dead at Jerusalem within the past year, or that we could be led to accept any of the mediæval or modern so-called miracles in support of corrupt cults; and pure cults make no claims to miracle-working. Thus in the ordinary course of nature we have no dispute with Agnostics

as to the incredibility of miracles. The Bible-testimony for miracles is made to depend on the character of the Bible-revelation, with which they stand or fall. The believer in the mechanical theory of the physical world may be justified in acknowledging on appropriate evidence the existence of an extra-physical world, with hosts of spiritual inhabitants, as well as in God, the Author and Governor of all: and that there may be, not physical, but equally effective means of communication between that world and our minds. Now if we have sufficient evidence in the pure and holy teaching of scripture, that it is a revelation from God, and that His Son came down to redeem us from our sin, then the absence of miracles might prove a difficulty, evidence of their occurrence is admissible, and they may be consistent with and confirmatory of the religion with which they are associated. They are the suitable accompaniments of a unique manifestation of the Divine love; and we do not know whether they were accomplished by reversing, specially diverting, or expediting natural processes, or by supplementing them with other laws, or by pre-appointed combinations at the outset of the world. The Bible that records them warns us against strange miracles, and honours the laws of nature by designating them as "the ordinances of heaven." These laws and forces are all God's appointed instruments, which He uses according to, and not in violation of their proper character, for the execution of His purposes.

It still remains true that the more perfectly we establish the mechanical mode of viewing things the less prominence is given to their Maker. The old arguments of natural theology are said for this reason to have lost their vigour, and hence the excellency of the cosmic system becomes a hindrance to faith. This, however, is only apparently the case, for the mechanism requires the explanation which was once spent upon its products. Once we tried our hands on explaining how a watch was made; now we are asked to account for the machine that makes watches, and that is always improving on the quality of its products, which it does according to natural selection by producing them in large numbers and of different qualities, and then securing the destruction of all but the best. In the childhood of science we investigated particular objects; now we consider not the teleology of organs, but of the underlying dynamical principles which produce them and regulate their development.

Many attempts have been made to banish from science the consideration of *teleology*, or purpose in nature. Investigators were afraid to employ teleological language, and whenever they drifted into it, they soon backed out, apologising for its momentary use. Their shyness has often prejudiced their work, for as Gassendi said long ago (with the case of Harvey's teleological work on the circulation of the blood fresh in his mind), "the final cause often leads to the discovery of the efficient cause." Now, however, the advance of the mechanical view is forcing teleology upon our attention; for if the universe is a machine, it is by the same reasoning known to be a complexity of sub-machines, every one of which has its own purpose to serve. Hence we find Sachs, who has done more than any other man to apply the mechanical theory in botany, and who is not hide-bound by theology, pleading for the right to use the word *purpose*, calling it "a word which many fanatics of the theory of descent would, if possible, banish from our language," and adding that the whole of physiology is taken up with such questions. (Sachs' *Lectures on the Physiology of Plants*, Lect. I.) Huxley has made the discovery that physiological phenomena can be expressed in the language of teleology. (Huxley on *The Crayfish*. p. 137.) And though, like Sachs, he falls short of the theistic significancy of this, he has more recently stated (in the chapter he contributes to the *Life of Charles Darwin*), that whilst Darwinism abolishes the commoner and coarser forms of teleology, it really reconciles teleology and morphology. In this sentence he adopts (perhaps unwittingly) the beautiful expression by which Asa Gray showed at once his Darwinism and his faith, viz., "Let us recognise Darwin's great service to natural science in bringing back to it Teleology, so that instead of Morphology *versus* Teleology, we shall have Morphology wedded to Teleology." (Asa Gray, Letter in *Nature*, June 4, 1874.) Weismann argues in his *Studies of Descent*, that the mechanical conception of nature favours teleology, thus, "The harmony of the universe, and of that part of it which we call organic nature cannot be explained by chance. Mechanism and Teleology do not exclude each other, but are rather in mutual agreement. Without Teleology there could be no mechanism, but only a confusion of crude forces; without mechanism there could be no Teleology, for how could the latter otherwise effect its purpose?" And quoting Von Hartman he says that, "the most complete mechanism conceivable is likewise the most completely con-

ceivable Teleology"; and adds Von Baer's definition of the laws of Nature, as "the permanent expression of the will of a creative principle." Charles Darwin's letter to Asa Gray, written in 1860, agrees with these views and with the stricter theology, though he knew it not. He wrote: "I am inclined to look at everything as resulting from designed laws—with the details left to the working out of what we call chance." The theologians say that under Divine Providence things "fall out according to the nature of second causes, either necessarily, freely, or contingently."* Darwin would save his use of the term *chance*, as only so relatively to our knowledge, and the theologians would explain that neither free will nor contingency is independent of the Divine bounding. The arithmetic of expectations and probabilities, as applied by catuaries to matters depending alike on free will and fortuity, seems to show that these things are somehow under law, though not in a fatalistic way, and that Darwin and the divines are at one with each other and with the truth: nor ought this argument to lose its value, if it appear that in later years Darwin's difficulties rather increased, for he was often bewildered, so that he could not see his way. As to his chief difficulty, of there being too much misery in the world, Bishop Temple has remarked that Darwinism itself has rather helped us to meet it, by showing that we are looking on a work not yet finished; and besides this there is no evidence that misery was the end in view for any part of nature's machinery. W. Thistleton Dyer briefly gives the verdict in which all these witnesses are agreed, when he writes to the Duke of Argyll thus: "No scientific man is so foolish as to suppose that, however completely mechanical may be our conception of nature, he is in any way competent to account for its existence. The real problem of all is only pushed farther back." (Dyer, Letter in *Nature*, Jan. 16, 1890.)

The bearing of the mechanical conception of the universe may thus be summarised: 1. It is actually or provisionally established, save as to the origin of matter, of energy, of life, animal intelligence, and the body and soul of man. 2. It will not weaken, but rather fortify the evidence for design in nature, for theism, and for universal providence. Thus it is not materialistic, though it is accepted by some in a materialistic sense. 3. It will not invalidate the Divine claims of

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* *West. Conf. Faith.* v. 2; discussed in Cunningham's *Reformers and Th. of Reformation*, p. 493.

scripture; though it may favour naturalistic interpretations of the cosmogony, the deluge, and some other parts, in accordance with geological discoveries, and as suggested in the Bible itself. 4. It will fortify the proper miracles of scripture, by showing that whilst incredible as part of the ordinary course of nature, they may be a unique case, bound to stand or fall along with the Divine character of redemptive revelation. 5. It will not weaken faith in personal immortality, or in the operations within us of Divine grace, or in the existence of an unseen spiritual world; but it may favour the opinion that the human soul is derived from and dependent on some physical substratum. 6. Whilst recognising God's continued control over all parts of nature, we do not understand that His control involves any disturbance of natural order or movements (that is to say, the free acts of men are in some sense their own and not God's, though men are dependent on Him for the exercise and limitations of their liberty); nor that He is the only worker. Nor do we expect ever to understand how He is able to operate upon nature. We can operate upon our own bodily organism, and thence upon the external world; but we cannot tell how, except that we act in harmony with natural laws. The fact of the Divine intervention is equally credible, and its mode must for ever remain equally inscrutable.

The President (Sir G. G. Stokes, Bart., F.R.S.).—I am sure I may convey your thanks to Professor Macloskie for his learned paper. I must not forget also to ask you to thank its reader.

J. W. Slater, Esq., F.E.S., F.C.S.—Of course all present will be more or less familiar with the speculations of the late eminent physicist, Siemens, on the return to the sun of the energy which it emits; but no one, I believe, has ever detected the existence of any such recuperation:—At the third page of the paper the author says: "The earth and our body are, in whole or in part, machines at work, and a great deal more, and the task of science is to watch movements, transformations, and developments, and to formulate them into 'laws of nature.'" These reservations "are in whole or in part machines at work and a great deal more" go far to exclude organism from the purview of a merely mechanical con-

ception of nature, as they include the characteristic attributes of life. In reference to page 222, the Egyptian papyri show that in ages past chemistry has had an existence prior to alchemy. This fact is precious as being fatal to more than one of the theories of Comte.

Rev. A. K. Cherrill, M.A.—On page 227 the author makes the remark, "the same consideration has led Christians to fight shy of astronomy, physiology and recent advances in biology, and to discountenance investigations and theories which promised to explain the world too well, lest science should explain away our God." Now it seems to me that with regard to the mechanical conception of nature, perhaps if one takes it in a very crude and superficial sort of way it might be thought to explain the world too well and to explain away the necessity for a Creator: but on the other hand I think that if you pursue the mechanical theory of nature into its minute details it rather has the reverse effect. An instance occurred to me which seems rather a strong one, in reading Weismann's *Germ-plasm or theory of Heredity*. If one looks at the general theory of development and evolution in the light thrown on it by embryology in a somewhat vague and superficial way I suppose one gets hold of an idea something like this. Embryologists tell us that the life of the individual represents, on a small scale, the life and development of the whole race. We ask what is the starting point of life of an individual and they tell us, quite correctly, that it is the division of the germ itself, first of all into two cells which after further division gradually give rise to the various parts of the body. First there is the division of one cell into two cells, and those who wish to explain away the mystery of nature may think they have got hold of something very simple here—that the origin of life is just the division of one cell into two like the division of a single drop of oil into two drops; and then they may imagine that further development takes place by a continual repetition of the same simple process. It does not seem to require any great power to bring this about, and if we could start our conception of nature on anything so simple we might perhaps be able to build it up without appealing to any supernatural power. But when we come to look at the mechanism of nature in detail such a notion is at once upset. For what is this first process that brings about the simple division of a cell? Weismann gives a

description of it, which shows it to be a process of most extraordinary complexity.

First you have the nucleus of the cell forming itself into a sort of spiral coil, then the coil breaking up into eight separate little lobes, and then the formation of two spiral centres and a radiation from those centres of extremely fine fibres, these fibres getting hold of the lobes of matter and dividing the contents of the cell into two parts, and finally selecting those parts according to their nature, so as to divide the whole of the matter into two separate portions of equal size but of different properties, so as to make two cells out of one, not merely by dividing it in halves but into two cells of different properties, so that one develops in one direction and one in another. All this is extremely complicated and extremely wonderful, and all taking place within a minute cell which almost defies the power of the microscope to distinguish it. Where does all this wonderful mechanism come from? We can hardly suppose that it made itself. I do not see how we can say that it was evolved out of something simpler, because this is the beginning, the first step. So it seems to me when I look at the wonderful things we find in nature, they really do not lead us to suppose that we can explain the world too easily and find no need of a Creator; but rather, perhaps, on the contrary, that the world is not by any means so easy to explain as some think it is, and that the very simplest operation of nature—the very first germination of a spore—is such a very complicated operation, that it requires, if not Divine power, at any rate a power infinitely transcending anything that we can imagine, or that the human brain can conceive, to carry it out. (Applause.)

Rev. F. A. Walker, D.D., etc.—There is a passage on page 228, where it is said, "we presume that the cerebration of the evil disposed is as great quantitatively as that of the well disposed, and that the cerebration of an idiot involves as much expenditure of blood and brain tissue as that of Newton." I should like to know if this has been proved beyond dispute. We know at any rate that the brains of many distinguished men have been of exceptional weight. That of Cuvier, the naturalist, who has been mentioned to-night, was found to be over the average bulk or weight.

Dr. A. T. Schofield.—In reference to Cuvier's brain, I may mention that weight is not always a sign of great intelligence.

There is a case known of the brain of a washerwoman in Germany which weighed 64 ounces (greater than Cuvier's), and she was known to possess no remarkable intelligence. I have to notice one or two points of interest in this paper. In the closing sentence of the first paragraph on page 220 the author says: "A machine is a contrivance for getting some kind of motion or work out of it in the course of its transformations; and the mechanical conception of nature signifies that all the physical movements and phenomena of the universe have been derived from the interaction of the matter and energy which are its constituent factors." "*All* the physical movements," and it goes on to say, "this theory may be held in a theistic or an atheistic sense." Then there is another sentence on the last page but one of the paper being summary No. 1. "It is actually or provisionally established" (it is the mechanical conception of nature that is being summarised), "save as to the origin of matter, of energy, of life, of animal intelligence and the body and soul of man." I presume those are the organs he is referring to.

The point I should like to bring out and emphasise is that life in its action, as well as in its origin, is not mechanical. Life is a power that directs the movement of bioplasm or protoplasm in a certain way. The very fact of saying "I am" at once transcends the mechanical conception of nature. The world and life are not mechanical toys of superior construction, but a great deal more; nor, on the other hand, though recognising a beginning and an end, is the recent description of the universe by Professor Huxley a correct or adequate one: "Natural knowledge tends more and more to the conclusion that all the choir of heaven, and furniture of the earth are the transitory forms of parcels of cosmos substance wending their way along the road of evolution from nebulous potentiality back to the indefinite latency from which they arose."

Law is not a force—only an observed sequence, and the reason why there is so little apparent change, and that these natural laws are so fixed, differing thus from human laws, such as the English common law, is because of the perfect wisdom that has the ordering of them. If we define motion it implies energy, and energy implies will, and will implies mind. Inertia is the property of all matter, but energy and action are the properties of all mind. Nothing *must* be; nor can we say that anything is supernatural. Natural laws may act regularly for any time and then change. An

inhabitant of the tropics who had never seen ice might think that water was always liquid, while an inhabitant of the North Pole might say that all water was solid because he had never seen it in its liquid state, but the change from the one state to the other is not supernatural. So with one who had not seen the transformation from the grub to the butterfly. It would be supposed by us, naturally, that a heart always beats in one direction and forces the blood in one channel; nevertheless the heart of some ascidians beats in one direction for some time, and then reverses the process and beats in the opposite direction. Even mechanical machines may be made to change irregularly with uniform forces acting on them. Babbage's calculating machine counted to 100,000,001 in perfect order, then jumped 100,000 (viz. 100,100,002) continued for 2,761 terms, then changed again for 1,430 terms and then again for 950 terms of the third order. I have merely adduced these instances to strengthen the conclusion at which I wish to arrive. I believe that all the phenomena of life we see, however irregular they may appear, are the result of the uniform action which we call natural laws. These are, as I have said, the active phenomena of life. But are they mechanical laws? If so under what branch of mechanics can they be ranged? Take the laws that govern reprodnction. The codfish, for instance, lays millions of eggs. The male of another fish (the Arius Bookei) carries 12 eggs of the female in his mouth till they are hatched. What conception of mechanics is there in those two observed phenomena of life. I would suggest that although definite laws plainly regulate the ordinary course of animate nature, others equally definite may not yet be fully understood by us, and both certainly imply a law giver who has power not only to plan but to suspend or alter their action. I would therefore regard the laws of God as uniform rather than mechanical in their action, and that the law giver has power to suspend or to alter this action, and, moreover, that there is in man the power of mind, that can direct or modify some of these natural laws at will, and this in an entirely non-mechanical manner.

In conclusion I would emphasise the fact with regard to the evolution of species—that as far as we can understand, involution and evolution form a fixed equation, so that nothing can be ever evolved that has not first of all been involved by the Creator or Supreme Being. (Applause.)

Dr. C. Collingwood.—Many points in this paper afford matter

for discussion. The mechanical or physical conception of nature appears to me to have in it this difficulty, that there being a considerable analogy between the processes of nature and those mechanical acts which man is competent to perform, those who are in favour of the mechanical theory at once jump to the conclusion that there is nothing more in these apparently mechanical arrangements of nature than there is in those truly mechanical actions of which we are capable; whereas there appears to me to be an infinite difference between the two, inasmuch as, as has already been mentioned, all the processes of nature are of such an infinitely more subtle and beautifully arranged character than those comparatively clumsy processes which man carries out, and which are truly mechanical processes. But I think in all these cases we must remember the great distinction to be made between matter and mind, between the physical and the hyper-physical, the supernatural and the spiritual.

The PRESIDENT.—The author of this paper being a professor in a distinguished college in America has not been able to be present to-night, but we shall place in his hands the remarks made by the various speakers. From a first brief perusal of the paper, I cannot help thinking that he has well pointed out that there may be certain laws which we ordinarily observe in the course of things relating to certain natural phenomena; and that over and above that, there are the facts of consciousness and will which we cannot in any way reduce to mechanical conception. It seems to me that that is allowed all through the paper, and that there will be no difference of opinion on such a point as that between the author and any of those who have spoken to-night.

I may observe that I think the word *energy* has a perfect physical signification, and that it has one in ordinary life which is quite different. We may speak of a man of energy; but that is a totally different thing from energy in the physical conception, and if we use the word *energy* in the physical sense it by no means follows that we have any thoughts of something altogether different to what the term energy means as frequently applied in ordinary conversation. When we speak of *energy* in a physical sense, that has nothing to do with the exertion of the will when I move my hand to the right or left or use it in more energetic manner than that.

The meeting was then adjourned.

REMARKS ON THE FOREGOING PAPER.

The Rev. Professor J. H. Bernard, D.D., writes :—

I have had but little leisure since I received the proof copy of Professor Macloskie's paper which you were good enough to send me; and fear therefore that it would be rash to make the comments you invite, as the subject is a difficult one and demands caution and precision of statement. The paper is most interesting, and with the majority of Professor Macloskie's conclusions I suppose that most members, like myself, will find themselves in cordial agreement. I think the note on the first page of the paper, as to the word "mechanical," is quite necessary; and indeed the comparison of the universe to a machine is, as the author is well aware, and as he points out, most misleading. I should be disposed to prefer Mr. Abbot's term "organism" to "machine" (page 224), though the force of the author's criticisms is not to be denied. Is it not the case that both elements have to be taken into account? On the one hand we may lay stress on God's transcendence, on His distinctness from, and superiority to nature, and this is the point where Christian Theism differs from Pantheism. But on the other hand it seems to be equally the demand of faith and of reason that God is the Life of the World, that He is *immanent* in nature as well as its author and governor. And this is where the formulated Theism of our day differs from that of Paley's. We recognise that the cosmos is not merely a machine once for all constructed and set going by the great artificer, but that it is an organism of which God is at every moment and in every part the Life.

I do not quite understand what is said about personal immortality "on a mechanical theory of mind" (page 228); but possibly no more is meant than this—that the Ego is in no way affected by the laws of space and time which it transcends, and that therefore we can in no wise infer its destruction from the fact or the analogy of bodily dissolution. And it may be true and useful sometimes to insist that we have thus no right to expect natural law *everywhere* in the spiritual world.

G. B. Buckton, Esq., F.R.S., writes :—

The Institute may be congratulated on the receipt of Professor Macloskie's thoughtful and very interesting paper. The following remarks are made only with a view to discussion. They make no claim to originality.

Perhaps it is inevitable that giants must be slain more than once in a generation. If premises alter, conclusions must be modified. Arguments *pro* and *con* on abstract ideas must recur with more or less novelty in them.

The conception of a Mechanical Universe as restricted to physical phenomena appears to be reasonable and in a measure compelling. Though the scientific man admits of no interruption of continuity, and the sequence of phenomena implies means to ends, the extreme links of causation are hidden to our conceptions.

For those who admit the necessity of a Supreme and beneficent Intelligence it seems difficult to see how reason can fail to assent to final purpose. Argument is not sensibly weakened by the knowledge that to us, in exceptional cases, the purpose seems to be thwarted or only in part carried out.

Objections have been made that the human eye is not strictly compensated for spherical and chromatic aberration by its humours. Yet its value to us for all practical purposes is sufficient, inasmuch as we are not aware of the eye's chromaticity, and we are not assured that the mind does not itself make its own compensation of the error, if there be one.

We may conceive physical phenomena as grouped under the two heads of matter and energy. Both of these finally resolve themselves into ultimate facts. They pass into abstracts which we all believe in, though their natures are unprovable, and their genesis in time and place is inconceivable. If the dictum of one of our chief thinkers be accepted, we learn that matter has stamped on it the marks of a manufactured article; yet no one has shown in a similar sense such to be a condition of intellect in the abstract.

Pascal says "I know" therefore I am superior to matter and to unconscious energy. Choice implies a power to select and to control one law through the intervention of a higher law. Thus will is before law, though in the human economy it is not independent of it.

The physical life of an organism is intimately bound up with the chemical changes involved with nutrition and other functions. Biologists have not helped us much as to the conception of

energies in the ultimate cell involving its apparent choice of materials suited to its multiplication and the reproduction of characters peculiar to itself.

Apposite to the law of economy of material it may be often seen that not one, but many organs which have been necessary to an animal during one stage of its existence are suppressed, or become rudimentary in a subsequent stage. So, in preparation for the exigencies of altered surroundings, perhaps many organs of the same animals simultaneously develop themselves, the functions of which were not required antecedently.

As may be seen in some other insects, M. Künckel Hercules has recently shown that germs of the wings, of the legs, of the mouth parts, and the eyes are to be traced in the larvæ of Volucellæ long before they can be beneficial to the two-winged imagoes which alone possess these organs.

This convergence of lines connected with the elaboration of useful parts towards the fulfilment of a particular economy has been considered under the theory of probabilities; and the evidence is overwhelming against the likelihood of such a convergence being the result of a purposeless variation.

The author of the above cited paper well remarks that the scientific investigator may not feel it necessary to ask from whence energy and matter proceed, or who gave them the qualities they have. Yet he may have scientific objections to urge against the philosophic speculation, that mind and matter are convertible and modifications one of the other; thereby excluding the possibility of extra-physical existences.

As one out of a thousand examples of the simultaneous correlation of parts in insect life, the interesting economy of *Eristalis tenax* may be cited. The imago of this handsome Dipterous fly is in habit a complete contrast to its larval condition. The former is furnished with large compound eyes and stemmata. It is vivid in its action whilst on the wing, either poising itself over flowers, or swiftly darting from one sunbeam to another. The abdomen is broad and flat, and only sufficient to contain the small, and often almost rudimentary, viscera of the insect. This form of abdomen we may well believe acts as an aerial rudder, by which the remarkable dodges on the wing are executed, in avoidance of the capturing net. The acuteness of this insect's vision, and the consequent instantaneous response made by its large wing-muscles on the approach of danger may be noted.

The keen vision of the male and his increased activity, may be

seen in the darts made by him in chase of the female. Food probably is not necessary to these flies. They however consume the pollen and honey of flowers. A rather complex but feebly constructed mouth leads to an attenuated stomach and small intestines.

But as to the habits of the larva, all here is changed, and new organs are developed suited to an aquatic life.

Where the egg of *Eristalis tenax* is laid is not yet certainly known, but it must be deposited in pools of stagnant water containing mud formed by the rotting of animal and vegetable matters of a disgusting character.

Baron Östen Sacken has shown that the distribution of this insect is connected with the migrations of the human race; and this would seem to have some reference to the interest it shows in human excreta, yet as the larvæ are found in tangled masses, in the shallow parts of ponds visited by cattle, its food is not entirely restricted to the former kind noted. The fat maggot-like larva buries itself in the slime, in places where ordinary gills would fail to allow of respiration. The singular modification of tracheæ to effect this purpose has been often shown, and the elastic character of the long compound respiratory tube at the tail end has been described by M. H. Viallaines and others. This long tube ends in a single opening, fringed with bristles, which, through their repellent action on the surface of the water, forms a kind of funnel or depression through which, free from mud, the air passes into the two somewhat capacious tracheal sacs in the semi-transparent body of the grub.

As the level of the water in these swamps rises and falls, a beautiful provision is made to allow these tracheal tubes to stretch some inches, or to contract, without kinking the double tubes within, and closing them.

The larva of Eristalis is eyeless, and at the later stages of its development it is capable of protruding seven pairs of serrated false feet, which enable it to crawl to the shore and to bury itself for pupation in the damp earth.

The larva shows no conspicuous mouth-parts, but its anterior end is furnished with three lobe-like lips (the labrum) plentifully studded with recurved horny hooks, with which the animal rasps up and reduces to a pulp the matters on which it feeds.

The respiratory tube is often tied by the insect into curious knots without interfering however with the internal calibration. This knotting may be commonly seen when the larvæ are compelled to rise to the surface of deeper water Here they may hang

with their heads downwards for hours, showing their breathing tubes stretched like long threads. Some of the Tipulidæ have similar repellent hairs at the tails of their larvæ.

The life-history of Eristalis and its congeners Helophilus, &c., need not here be discussed. The foregoing remarks are only brought forward as an additional instance of the simultaneous correlation of several organs to one definite end; and of their elaboration, long before they can be looked upon as at all beneficial to the individual, the significance of which has been well pointed out by the Duke of Argyll under the head of prophetic germs.

Except under an adverse and unprovable hypothesis, the idea of purpose seems alone to be that on which the mind may rest, though in adopting it, we doubtless pass out of the test of experiment, and we concede that it is no explanation of "the How."

The Rev. R. Collins, M.A., late of Cottayam College, writes:—

Dr. Macloskie's paper appears to me to mark a great advance in scientific thought. The remarks on teleology, or final causes, are well chosen; the result being the conviction that we must ultimately get back behind energy to the will of an intelligent agent.

This leads me to note that energy is often spoken of as though it were an objective reality. But is it so? Does it not belong to the same category of abstract ideas, as force, weight, life? It exists, in short, nowhere but, as an idea, in the reasoning faculties, it is the ideal cause of work done, as force is of material movement. There is a passage in *The Unseen Universe*, by Balfour Stewart and Tait,—I am quoting from memory—in which I believe energy is claimed to be an "objective reality," although force is said to be "not a thing," but purely ideal. This seems inconsistent. If force be ideal, so also, surely, is energy. There can be no idea of energy, except as the manifestation of some substantive reality that is energetic. This does not invalidate reasonings upon energy: but is a necessary guard upon thought; and especially so, as it appears to me, amid present scientific modes of expression, through which men are sometimes betrayed into what Professor Huxley—speaking some time since on natural laws—called *Scholastic realism*.

The Rev. C. Lloyd Engström, M.A., writes:—

In my judgment the paper is particularly valuable, because in a very short space it makes very plain the tendency to view *all* phenomena from the "mechanical" point of view. The writer is evidently in the stream of much that is commonly regarded as anti-Christian in tendency. He therefore speaks with knowledge of both sides, and he helps us quite as much by showing us the trend of much scientific thought as by pointing out how we may yet believe in a spiritual world.

Mr. J. W. Slater, F.C.S., writes:—

Page 224. The so-called iatro-mathematicians, such as Borelli and Sanctorius are, as it seems to me, too favourably spoken of. Their speculations directed research into wrong channels, and should serve as a warning. We all know of Professor Fleeming Jenkin's mathematical argument against organic evolution based upon an assumption which would never have occurred to him had he been a biologist.

THE AUTHOR'S REPLY.

Princeton College, U.S.A.
October 21, 1895.

As the design of my paper on *The Mechanical Conception of Nature* was simply to submit to a competent jury my views on an important subject, I am gratified by the attention accorded, and now only ask an opportunity to dispel any misapprehensions as to the meaning and spirit of the production.

I have to thank Sir G. G. Stokes for his kind remarks as President.

Mr. Slater's citation of the chemical knowledge of the ancient Egyptians falls in nicely with my observation (p. 222) about

alchemy developing into modern chemistry; for the continuity between the Egyptian and the modern science is through alchemy, which, as Myers shows, had its origin in Egypt. I may also set off against his exception to my reference to the iatro-mathematicians the facts that the hydraulic idea of circulation forms a valuable chapter in modern works on physiology, and that the mechanics of the bones and joints is now being worked out by our ablest "theoretical anatomists."

I hope that Dr. Schofield did not understand me to argue that life is only a physical force. My attitude is that of an earnest Theist. The point of my contention was, that *if* proof were forthcoming that vitalism was only a special kind of chemism, a doctrine very extensively held, still the argument in favour of Theism would be sound. I did not think it necessary to give my personal views about the nature of life. If I could make good the contention for which I argued, I believe that this would be a gain to our cause, for some people are prejudiced in favour of the chemical theory of life because of its apparently atheistical look, and others for the same reason are prejudiced against it. I think that chemistry as well as biology proves the Being and wisdom and power of an imminent God.

The same critic's remark that the laws of nature are laws of God will have no disclaimer from me. I think that they are the laws referred to in Scripture as "ordinances of heaven." But I entirely dissent from the position that they vary in their action; unless the meaning is that they are liable to perturbations from the interference of other laws. It would also appear that God has conferred on His creatures a certain measure of independence, just as our limbs are in a *qualified* way able to act independently of our will; and thus all of men's acts are not to be directly considered as Divine acts. But I regard God as not only initiating but as upholding and controlling all the processes of nature.

I am grateful to Prof. Bernard for the valuable remarks which he offered on the general question.

I may here remark that whilst I am not an advocate of evolution,

and I think that whatever truth may be in it, its real inwardness is still a secret, yet I regard it as unwarrantable to make the defence of Christianity rest on the assumption that the theory of evolution is wrong, as we find some do. Anybody is welcome to disprove that theory if he can; but declamation will not disprove it; and the arguments from facts in favour of some kind of evolution appear to me to be gaining in force. To make the argument for theism rest on an arraignment of evolution is, in my opinion, an illegitimate setting up of one's private judgment against what is nearly the consensus of men conversant with the subject, and only injures the cause one is trying to defend.

ORDINARY MEETING.*

ADMIRAL H. D. GRANT, C.B., R.N., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

MEMBER :—F. S. Pepperdene, Esq., Kent.

ASSOCIATE :—Captain D. W. Scarville, West Indies.

A lecture "On the Structure of Insects" was delivered by Dr. Gerard Smith, M.R.C.S.E. A discussion ensued in which Mr. C. H. Goodman, the Rev. F. A. Walker, D.D., Mr. W. F. Kirby, Mr. L. Thrupp, and the Chairman took part. The lecturer having replied, the meeting was then adjourned.

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* 4th of 30th Session.

ORDINARY MEETING.*

D. Howard, Esq., F.C.S., D.L., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Associates :—The Right Rev. the Bishop of Honduras, Belize ; Rev. F. W. Breed, India ; Colonel J. Levering, U.S.V., United States ; D. Wright, Esq., Yorkshire.

The following paper was then read by the author :—

THE PHILOSOPHY OF AUGUSTE COMTE RE-CONSIDERED. By J. W. Slater, Esq., F.C.S., F.E.S.

SOME forty years ago the British public was told of a brilliant and vigorous writer, of one who was proclaimed to be the greatest thinker of modern times—a man whose doctrines were to be to the nineteenth century something more than that which Bacon's were to the seventeenth and eighteenth centuries. The world heard—some in undisguised alarm, some with eager hope and others with critical reserve. My special task to-day is, leaving social and political speculations to more qualified hands, to inquire what has been the outcome of this positive philosophy as far as Science is concerned.

It is well known that Comte did not intend or attempt to furnish in his great work a series of treatises on the various sciences—a task for which he was scarcely qualified. He sought to display them in their mutual relations as a coherent hierarchy arranged on natural principles. He sketched their history, their present position, and in some sort their future prospects. He expounded their methods.

* 6th of 30th Session.

their leading doctrines, and the part which each has to play in the education of the individuals and of the human race.

No one can dispute either the difficulty or the importance of the undertaking which, if performed aright, must have given a powerful impulse to every science and been of incalculable service to every inquirer.

To ascertain how Comte can be held successful in the fulfilment of his task we must examine his three leading conceptions :—

He regarded all the sciences, physical and moral, as branches of one grand discipline, to be investigated on one and the same method. The originality of this conception is not very plain. For a couple of centuries the current of thought had been decidedly setting in this direction. Still no one, as far as I am aware, had formulated the idea with equal distinctness.

The second fundamental conception is put forth as the supreme law of human development :—"There are but three phases of intellectual evolution, for the individual as well as for the mass—the theological (supernatural, or it might be said the personifying), the metaphysical and the positive. In the first of these three stages man seeks the origins and the final causes of everything. He supposes all surrounding objects animated or sentient. It is curious, I may here remark in passing, how such an ascription of life and consciousness to all matter is again creeping in even among men of high culture.

In the metaphysical phase phenomena are referred to abstractions, "essences" or entities, whilst in the ultimate or positive phase the mind confines itself to a quest into the laws of phenomena, superadding nothing to what is actually observed, and dismissing noumena and causes as beyond human scope.

It cannot be denied that many instances can be found which seem to agree beautifully with this law. Thus the explosive gas which sometimes shatters a mine and scorches or buries the unfortunate workmen was at one time supposed to be an angry demon, a gnome or cobold, jealous of human intrusion into his treasure houses. The fact that the ordinary pressure of the atmosphere counterbalances a column of 32 feet of water, and no more, was explained by the dictum that nature "abhorred a vacuum" for the first 32 feet, but not beyond.

Still on a general and careful analysis of the rise and progress of science we fail to find the stages as above indicated. Mr. Herbert Spencer after a careful examination of the genesis of science, rejects the Comtean phases as not specially significant. It has been questioned whether mathematics can have had a supernatural or a metaphysical stage at all. Liebig was unable to trace the three stages in the history of chemistry.

If we refer to the earliest known documents concerning that science, such as the *Book of the Balance of Wisdom* (written about A.D. 1120), we find the records of calm experimental inquiry, distinctly "positive" in its spirit and free from anything mystical or fantastic. The strange superstitions and delusions with which we are so familiar under the name of alchemy seem to have attached themselves parasitically to the science at a later date.

The "Papyrus Ebers," which dates from the sixteenth century B.C., and which, though primarily medical in its aims, contains such information on the chemistry, the physics and the biology of those early days, is free from hocus pocus and gibberish. Sorcery was forbidden as strictly as in the Pentateuch, and the alchemistic magi were punished with death under Rameses III. All persons who wish to learn for themselves that the alleged theological and metaphysical phases of chemistry are illusory, may refer to Berthelot's work on Alchemy, based on a careful scrutiny of documents which have been preserved in national and university libraries.

We have next to turn to Comte's third fundamental conception, his classification of the sciences. Here we find shortcomings of grave importance. He takes his stand on "the degree of generality of the corresponding phenomena, the extent of their complication, their relative states of speculative perfection and their mutual dependence. Thus he arranges the abstract sciences in the following series:— mathematics, astronomy, physics, chemistry, biology, and sociology. Here we find ourselves on doubtful ground. It is plain that the sciences which come later in the rank are indebted to the earlier ones both for methods and for facts, and that the more frequently the more closely they approximate. But Comte forgot that there is also indebtedness in the opposite direction. Astronomy is beholden to physics and chemistry for methods of investigating the temperature, the nature and in some cases even the motion

of the heavenly bodies. In proof we need merely refer to the spectroscope, the indications of which would be utterly unmeaning had we no knowledge of physics and chemistry.

Chemistry is now known to be largely indebted to biology. The latter science aids us in determining the molecular constitution of compounds. We cannot understand the phenomena of fermentation and putrefaction, the formation of nitrates and of ammonia without a knowledge of the vital action of micro-organisms.

Such cases of mutual obligation are sure to become more abundantly known the more our researches are extended.

Further, the phenomena of physics are quite as general as those of astronomy, since we recognise the heavenly bodies only by the light which they emit or reflect. It is also difficult to conceive that we can anywhere have matter acted upon by certain of the forms of energy, such as heat, light, or electricity, without the possibility of chemical changes. Chemical phenomena are thus found to be no less general than those which form the subject matter of astronomy and of physics.

Comte's classification of the respective branches of physics is founded on the same principles which we have mentioned above, and it is by no means happy. He arranges in a linear series the disciplines which treat of gravitation, heat, sound, light and electricity. Now it must surely be admitted at once that the phenomena of light and electricity, the former of which agencies travels through the depths of space, whilst the latter probably pervades all matter, are vastly more general than those of sound. But the classification of the sciences in a linear series, on any principles, will be found practicable only by dint of arbitrary assumptions and by the neglect of obvious considerations. Comte certainly rejects the so-called imponderables. He does not admit, but neither does he deny the existence of the "ether" whose undulations affect us as light. Some credit may be awarded to him for taking this stand, if we remember that at the time when the *Philosophie Positive* was written (1830–1842), many French thinkers still clung on in an unhappy devotion to the conception of "caloric" as a substantive entity.

Electricity, according to Comte, forms a natural transition to chemistry. Yet the relations of chemistry and heat are now found, thanks to the labours of Berthelot and Thomson,

to be at least equally intimate. Indeed Comte seems to have little foreseen how physics and chemistry would approximate and almost coalesce in the half century succeeding the date of his first volume. It is no longer safe to say "physics treats of masses acting at sensible distances; chemistry treats of molecules acting at insensible distances." Even Comte's prophet, G. H. Lewes, admits that "physical phenomena are often molecular" (*Philosophy of the Sciences*, p. 96).

In the *Philosophie Positive* (vol. iii, 103–9) Comte explicitly alleges that dualism requires to be universally received in chemistry, even as regards organic compounds. G. H. Lewes considers as recently as 1853 that chemical philosophy is daily advancing more and more to a "recognition of the necessary dualism of all chemical combinations" (*Philosophy of the Sciences*, p. 145). Here then we have a lack of insight into the future prospects of a science scarcely less striking than he displays when he refuses to admit the mutability of organic species. It is perfectly true that in 1838 dualism was still in the ascendant and was taught in all the universities. But signs were not wanting which should have been sufficient for a man of such penetrating insight as Comte is represented by his admirers. Men of the most every-day stamp can admit a change when it has been formally introduced. But from our spiritual pioneers we expect the power of detecting its earliest streaks of dawn.

We come next to biology, the doctrine of life, which Comte unfortunately makes to include psychology. Here he is not followed either by his prophet, G. H. Lewes, nor by his admirer—in many respects—John Stuart Mill. Both these writers justly contend that should mind be ultimately proved to be merely a function of the nerve-centres, the successions and co-existences of mental states are capable of being directly studied without reference to the cerebral changes which may be their immediate antecedents. Even if life were simply a "play of matter," thought is a higher phase of life, displaying special phenomena, and admitting—or rather requiring—special study.

Comte rather inconsistently gives a definition of life, rejecting the irrational attempt of Bichat, preferring that of De Blainville, "Life is the twofold internal movement of composition and decomposition at once general and continuous." This definition is faulty, as it does not include

the central idea of reproduction, and it may further be pronounced not more intelligible than the thing to be defined.

Comte regards tissues as being for the animal and the plant what molecules are for chemical compounds. He objects to the life-monads of the physio-philosophers. On cells he has nothing to say. But it must be particularly and regretfully noted that he does not accept the views of his great countryman Lamarck or of Darwin, but regards organic species as fixed and permanent. He does not, indeed, tell us that species have existed for ever, or came into being spontaneously. Nor does he assert that they were ever created such as we now find them. Creation, indeed, would prove a difficult task for Comte's newly invented God, "human nature in the abstract." The subject is in fact shelved, and thus a great and most interesting portion of the science of life is renounced. The "Positivists," indeed, raise the plea that science does not legitimately deal with origins. Be it so: Evolution is the name of a mode not of beginning, but of continuance.

Darwin nowhere attempts to explain the origin of life, the passage from the inorganic to the organic.

How much Comte has missed by failing to appreciate the doctrine of evolution it is not easy to sum up. Acting as he did, he has betrayed a proof of deficiency in profound philosophic insight, in the spirit which foresees and foretells the future track of discovery. More than this, he has thrown his weight into the scale of the reactionary school of Cuvier. With, I believe, the single exception of G. H. Lewes, all the leading positivists in England and France still think it incumbent upon them not merely to reject, but to vituperate evolution. M. Robin and Mr. Oswald Dawson denounce Darwin with the utmost volubility. Whether this is vindictive jealousy springing from the fact that evolution is a brilliant success and positivism a signal failure I have no means of ascertaining.

We may next come to a consideration of Comte's phrenology. Rejecting the threadbare craniological system devised by Gall, he still adopts the principle that the brain consists of a number of distinct organs, each the seat of some special faculty. But he allots to each faculty its seat, not in obedience to comparative observations, but arbitrarily, *i.e.*, according to Comte's notions of where they ought to be fixed. He leaves to anatomists the task of discovering evidence in

support of his system. So far, we need scarcely say, such evidence has not been forthcoming. Hence Comte's phrenology has to encounter all the difficulties which beset the system of Gall without its *a posteriori* evidence. The two are not in harmony. It must, however, be noticed that Comte does not fall into the error of denying to the lower animals the possession of the moral sentiments, despite the evidence of such sentiments in their conduct and despite the fact that the brains, *e.g.*, of the anthropoid apes do not differ from our own in the manner and to the extent which this assumption would involve.

In that Comte has thrown no novel, guiding light upon the philosophy of life, but by rejecting the principle of evolution he has done his best to extend and perpetuate darkness.

We must now turn to the final member of Comte's hierarchy, Sociology, or Social Science. He certainly proclaimed that human society has its inherent laws, not depending upon the caprice of rulers or statesmen, or upon the noisy utterances of ochlocratic stump-orators, laws capable of being discovered by methods similar to those which we are successfully following in chemistry or in biology. Few competent judges will here join issue. Yet I do not find that he anywhere recognises the necessity of studying the simpler societies of the lower animals—such as ants, rooks, etc.—before proceeding to examine the more complicated polity of our own species. But has Comte really placed in our hands any distinct clue capable of being followed up? Are we taking any steps towards constituting the promised science? Look, for instance, at our late "Social Science Congress." Its transactions were filled not so much with attempts to reduce social phenomena under laws capable of verification and leading us to a prevision of facts not yet observed, as with so many disconnected declamations on every possible subject that can be construed as having any bearing on human society. But is Comte to be blamed for this failure? By no means: but that such shall we say failures can still be enacted in the name of social science shows that no definite plan has yet been drawn out.

On no ground has Comte been more strongly censured and at the same time with less justice than anent his rejection of "political economy." He condemns it as the outcome of a merely critical and negative philosophy, isolating itself from the whole to which it should rightfully belong, and seeking to

take its place. In his rejection of this unhappy discipline he seems to me, however, to have been for once guided by a correct principle. For what is, after all, political economy? Simply the study of man viewed solely as a producer, accumulator, distributer and consumer of wealth, all his other functions being temporarily set aside. That such disregard is temporarily justifiable as a scientific artifice for the sake of convenience in study cannot be contested. But how if this regard is continued and carried into practice? Let me take a parallel case. Suppose that nothing were known concerning the anatomy and physiology of man, and that the art of healing had been conducted solely upon clinical principles, practitioners observing that when certain symptoms were observed benefit was obtained by the use of this or the other remedy or appliance. Under such circumstances, if a body of men came to the conclusion that a knowledge of the human system and of its various functions was desirable, it would be quite legitimate for them to confine themselves for the present to the study of some one set of organs. They might, *e.g.*, select in this manner the respiratory apparatus and its laws of action. The truths they might thus ascertain would, if rightly applied, prove of great value in medical practice. But suppose that after having reached a moderately accurate knowledge of respiration and its organs, they declined to investigate other functions of the body, and attempted to heal the sick in the sole light of their recent studies, declaring, tacitly at least, that so long as the lungs of a patient were kept in healthy action, the digestive and circulatory organs, and even the nerve centres, might safely be neglected, the result would be quackery of a very dangerous type. But *mutatis mutandis* this is precisely what the economists do in attempting to reduce their fragment of a science to practice. Comte felt this, and hence his condemnation of the Economists was legitimate. I cannot help here expressing my regret that the section of the British Association which professes to deal with Statistics and Political Economy is still allowed to exist. It verges to a dangerous degree upon party politics, and at the best it merely does work which had much better be left to Chambers of Commerce.

Comte proclaimed that the "military and ecclesiastical *régime*," as he called it, of the present was to give place to an industrial and scientific organisation, the workman taking the place of the soldier and the savant that of the priest.

Never was there a more unfortunate prophecy, for never has the world known such enormous armies as those of the present day. It does not appear whether he ever asked himself if industrialism is or should be the final haven of the human race. He never sought if it were possible to point out a manufacturing and commercial city, province, or country where wealth, whether for the few or the many, has not been bought at the price of personal degradation. Whether industry can ever be so reorganised as not to yield these bitter fruits,—whether it will ever allow man the quietude and the leisure necessary for his full development Comte does not say.

We can scarcely pronounce him a friend to science. Not only was he no discoverer or originator in any department; in chemistry and biology his influence was distinctly retrograde.

He certainly assigns to philosophers, in his sense of the word, a position something like that commonly held by the priesthood. But he subordinates Science to Emotionalism. Hence we find his followers, almost to a man, taking part in "anti-movements," or even, in their own language, "setting bounds to the inroads of Science."

Comte held "science a futile, frivolous pursuit, unworthy of greater respect than a game of chess unless its issue be in some enlarged conception of man's life and destiny." In other words he did not feel that love of abstract truth for its own sake which actuates our great investigators. He was more of a moralist than a scientist, and his morals we may estimate from the fact that he deserted his faithful and devoted wife and attached himself to the wife of a convict!

The *Philosophie Positive* can scarcely be held to form an epoch in the spiritual history of the world. In comparison with evolutionism it appears barren in results of value. Just as the advocates of peace at any price have before now involved us in war at a very high price—just as the philanthropist often finds that he has been multiplying misery, or at best transferring the rights of the prudent to the reckless—so Comte and his disciples, in the hope of uniting all intellectual activity into one harmonious whole, have succeeded in generating a new heresy and a new intolerance.

I hope I have not expressed myself with any unjustifiable bitterness, but as, at the instigation of the late G. H. Lewes, I undertook a most careful study of Comte's work,

expending one of the best years of my life without gleaning an idea or a hint of any service, I cannot but regard him as a false prophet. Into his *bogus* religion, the worship of human nature in the abstract, I do not enter. It is too ridiculous for discussion.

The Chairman (D. Howard, Esq., D.L.).—We have to thank the author for his very interesting *résumé* of Comtian philosophy. Many modern writers know very little about it; but with those who are old enough to remember the fascinating writings of G. H. Lewes on philosophy, to whom it really did appear as if in this Comtian philosophy there was abundant reality and great promise, it is well to look back and find how entirely what was accepted by many men of the most superior minds as being (even apart from the substitution of his philosophy for religion, but from a philosophical point of view) almost a revelation, has failed to produce any result. I think there is a lesson of humility in this with regard to the acceptance of new theories which have not had time fully to test themselves. It is fair to claim for any new theory of philosophy a sort—if I may use the word in its literal and philological sense—of prophetic power. When we consider how the ideas of Newton have worked into almost every department of modern science without alteration, it demands our admiration. The only great alteration that has been made is the undulatory theory instead of emission of light, which is, after all, a comparatively small matter. Again, if we take the more modern developments of science and the great developments of human thought, the Comtian theory has shown itself peculiarly barren, and it is wonderful to look back and see how little has been done and how little influence upon human thought it has had.

There is this point, which the writer of the paper has left out, I think, viz., that it was an attempt to substitute something else for "a theological frame of mind," to use Comte's own expression. Taking "a theological frame of mind" in his very wide sense, it

is interesting to watch the absolute failure of an attempt to substitute his positiveness of assertion for theology.

As the writer has said, his religion of nature has proved almost too absurd for discussion; but it is interesting to remember that it is almost, if not the only, attempt seriously to substitute anything for the theological instinct which is of such tremendous force in human nature. (Applause.)

Mr. J. Kennedy, B.C.S., &c.—I think that the author of this valuable paper has performed a useful service in pointing out the unfruitfulness of Comte's scientific speculations. Comte classified the sciences according to their complexity and their method: he tried to establish an impassable barrier between each; and the only unity he admitted was formal rather than real—a uniform process of development according to the "law of the three stages" and the employment to a limited extent of methods appropriate to the simpler sciences in the study of the more complex. Both these grounds are untenable. The author has well shown that Comte's account of the development of the sciences is historically inaccurate: the isolation of the sciences can no longer be maintained; and Comte's forecast of their future has been signally falsified by the result. The sciences have a unity of their own in a much more real sense than Comte realised. I do not think, however, that the value of Comte's work consists in its science, although he sought a scientific basis for it. Comte belonged to the second generation of the French Revolution, and he devoted himself to reconcile the doctrines of the Revolution with what he thought most worthy of preservation in the Ancient Régime. His work was in reality an Eirenicon—a reconciliation of science with religion and with politics; and in order to do this he constructed the most thoroughgoing and systematic philosophy of agnosticism which the world has seen. I ought perhaps to except Buddhism, with which the Positive Philosophy has many points of contact. Both are agnostic—both lay the greatest stress on morals, (I speak of Buddhism in its purer forms,) and both are hierarchical—though not theocratic. But Buddhism is the wider since it embraces all the animate creation; and it has in its doctrine of *Karma* an explanation of the present and a hope for the future which is wanting to the Positive Philosophy. Comte's agnostic philosophy is based on the "law of the three stages." Mankind develops from the theological to the metaphysical, and lastly to the scientific

stage, which abandons the search for causes, and contents itself with the phenomenal. To each of these stages a certain social structure is appropriate. Now this theory contains two great truths—First, that all societies are based on religious belief, and, second, that certain forms of belief imply a certain social structure. Polytheist states are founded on the cult of the family and tribe—Christianity and Mahomedanism are founded on individual belief. The individual obviously has an importance under the universal religions which he cannot have under the tribal ones. Neither of these propositions, however, is peculiar to Comte. A third proposition more especially his own is the impossibility of isolating any single set of social phenomena and constructing a special science out of them in independence of the whole. The author has pointed this out with much force in his remarks on Comte's view of political economy—a view which I am glad to believe now finds a pretty general acceptance.

But these propositions are subordinated to Comte's famous "law of the three stages"—a law which has at first sight a certain air of plausibility and fascinating simplicity about it. It purports to show a systematic sequence in the intellectual and practical evolution of mankind. The theological and militant societies are the earliest: the scientific and industrial the latest stages. Science aids invention and industry—while the wars of antiquity are all classified as religious wars. But science aids war as much as industry: commercial wars are common; and although every act of a Polytheist state was in a certain sense religious, and so were its wars of conquest—yet they were not undertaken from a religious motive, and the conquerors often adopted the gods of the vanquished. The great mass of mankind from the beginning of the world has been engaged in industrial pursuits; and if industry was chiefly the work at one time of the lower classes and of slaves, the elevation of the masses can nowhere be deduced from Comte's laws, although he assumes it. It is very largely due to the influence of Christianity. His account of the intellectual development of humanity is equally untenable. According to Comte the savage imagines everything to be animated; learning better by experience he explains everything by hidden essences and abstract qualities; at length he abandons the search for causes and confines himself to the observation of phenomena. In proof of this Comte appeals partly to history,

partly to the development of the child, and by analogy (a doubtful analogy) to that of the human race. The appeal to history is untenable; it is indeed in direct contradiction to the facts. Anyone who has had any experience of savages knows that they no more confound things animate and inanimate than does the modern Englishman. The lower savages pay no attention to the ordinary processes of nature: they are too common to require explanation. The savage indeed explains any *peculiar* phenomenon or freak of nature as the work of a local spirit, for he conceives the race of spirits to be as the race of men; but he never confounds the phenomenon with the spirit which wrought it, or its habitation with itself. As a matter of fact, the higher savages employ a much larger spiritual agency than the lower ones do; and it is only in highly organised Polytheist states that we find a prevalent Pantheism—itself a generalisation from the universal agency of the spirit world. Comte himself admits that Mathematics never passed through the theological stage; and that no god was ever found for number or weight. The author has pointed out that this is true of all the other sciences: the science of the savage is as real in kind as the science of the savant. The appeal to history, then, is untenable. But Positivists rest the main stress of their argument not on history, but on the analogy of child life. I deny, however (and I speak with some experience), first, that any analogy exists between the thoughts of the child and the reasoning of the full-grown savage, or, second, that the infant does begin life with the presumption that all things are animated. What is animate, what inanimate, is a question of experience: the child may make a mistake as the grown man does, but he never fails to distinguish two classes of objects.

The metaphysical and scientific stages may be summarily dismissed. Comte knew nothing of metaphysics: his metaphysics are merely bad physics. Science has existed from the beginning: it has developed in extent, but not in kind: it occupies itself with phenomena, and gives no answer to the questions of theology and metaphysics. It cannot, therefore, take their place. I need not pursue Comte's system into further detail, but I should like to show briefly how Comte's view of religion is the reverse of what we hold to be the truth. The place of religion in the Positive Philosophy is merely that of an intellectual and antiquated mode of thought. This view of religion is of course obviously

insufficient. But even taking it thus, we might argue with truth that religion has immensely grown as an intellectual factor with the growth of mankind. The savage explains peculiar phenomena as the work of an unseen spirit; he bows his head when he passes the spirit's haunt; his religion at the best is occasional and intermittent. Christians and Mahomedans alike believe in God's perpetual conservation of the world's energy and existence as no less wonderful than its original creation. We admit that all our acts and feelings should be determined by His presence, for "in Him we live and move and have our being." Religion in this case is a constant force.

If Comte ignored the spiritual power of religion, he laid all the greater stress on morals. And yet his treatment of the development of morality is perhaps the greatest blot on his work. That development appears to me the most marvellous fact in the world's history. Yet Comte denied that any development had taken place! It is curious, as Mr. Slater says, that Comte should have refused to admit Lamarck's theories of evolution, although they would have helped him to establish his ideal unity of the sciences. It is equally curious that he should have denied the spiritual power of religion and the moral growth of the world, although his goal was the supremacy of altruism and the cult of "Humanity." In truth these exceptions were entirely antagonistic to the rest of his philosophy.

Comte's law of the three stages is from every point of view untenable; but he had a firm grasp of certain great social truths which I have pointed out: his historical summaries are sometimes superficial but often masterly, stimulating, and suggestive. Above all he tried to unite the two opposing currents of the French Revolution: to reconcile De Maistre with Condorcet. And it is here that his influence has told. His reverence for the past, his insistence on the correspondence between rights and duties, his conception of an altruism independent of a divine religion have undoubtedly exercised a considerable influence over agnostics—the only class who can accept his philosophy. Curiously enough his political speculations appear to me to have had a wider influence. They reflected certain currents of political speculation: and they may have aided political philosophers to form a philosophic basis for the Paris Commune and the Home Rule Bill for Ireland. With the Paris Commune the Positivists had much sympathy: and Mr.

Morley perhaps derived his ideas of the treatment of oppressed nationalities from this source.

I am sorry that Mr. Slater should have thought it necessary to refer to Comte's private life. He was mad when he quarrelled with his wife, and his relations to Madame C. de Vaux were, I believe, irreproachable. Comte was austerely virtuous, troubled only by an inordinate self-esteem. With almost everything else in the author's clear and interesting paper I have only to express my entire concurrence.

Professor H. Langhorne Orchard, M.A., B.Sc.—I think it is rather unfortunate that Comte's three stages of intellectual evolution are not allied to each other. They are not helpful to one another, but opposed to one another. The author has, I think, helped us to judge of Comte's true place and position as a philosopher, and has shown the very unscientific character of his mind. Comte attempted to classify the sciences and made mistakes which betrayed ignorance. He attempted to classify the different branches of science and physics and bungled. He made the prophecy that there was no connection between Astronomy and Chemistry—a prophecy which the subsequent discoveries of the spectroscope blew to the winds. Comte cannot, then, be regarded as having a scientific mind, neither do I think he had a philosophical mind. His second fundamental conception was that "There are but three phases of intellectual evolution for the individual as well as for the mass—the theological (supernatural, or, it might be said, the personifying), the metaphysical, and the positive"—that conception in that order appears to me to be utterly at variance with the true state of facts. It is supported neither by history nor experience. Comte's philosophy, in fact, has this great demerit: that it is not a philosophy at all. The great mission of philosophy—in fact, the very *raison d'être* of philosophy—is the investigation of causes; but it is just this investigation of causes that Comte taboos, and yet he supposes that his own system is, somehow or other, to effect an improvement in human conduct. He appears, after all, to entertain the notion of an end, but he does not see that the idea of an end and the means to an end involve the idea of cause. Means are really the connection between cause and effect. Comte, in tabooing *cause*, really tabooed *philosophy*. In any complete process of knowledge we commonly have these three stages connected one with another. This is seen in the case of the un-

taught savage, who notices that there is wind and that there is rain, which makes a suggestion to his mind of a certain sequence between wind in a particular direction and rain, and then the savage proceeds to connect those two events together and the thing becomes metaphysical. Despite Comte, the savage does go, to a certain extent, into this metaphysical stage. Comte does not believe that there is such a thing as force in nature. The poor savage believes there is, and goes further and believes in the Spirit, behind the cause. So all nature has a cause, and that cause originates from the great Spirit to whom the poor Indian can pray. The untaught savage as truly goes through these three stages as does the philosopher of the present day. To attempt to dissociate them, when they are intimately connected with each other and allied to each other in any complete process of knowledge, is manifestly unphilosophical. On what does Comte rely for the improvement of human society? Human improvement is held by him to depend on impulses from our propensities and defective faculties, all notions of public good being based on those of private or selfish advantage. He would seek, then, the improvement of Society in human nature—he would seek the Saviour of the lost among the lost themselves. But what does he say of human character? He speaks of "the radical imperfections of the human character," and says, "we must regret that even in the best natures the social affections are so overborne by the personal as rarely to command conduct in a direct way." He appears to prophesy the failure and impotence of his own system.

I desire to express my thanks to Mr. Slater for an exceedingly instructive and lucid account of Comte and his philosophy.

The CHAIRMAN.—I do not know whether Comte made reference to the very old idea of all knowledge branching from one stem, which is to be found in one of Lord Bacon's works, but one must see that a good many of Comte's best ideas are on those lines—whether they are borrowed from Lord Bacon or not I do not know. As a rule, people abstain from reading Bacon, and regard him as an effete writer; but the idea is well worthy of modern thought and admiration.

Rev. H. ELCUM.—I notice the author speaks of different stages in which Comte refers to the different sciences. Do I understand that he regards Comte as so speaking of those three stages that they could be worked out in each individual science?

The AUTHOR.—Yes.

Rev. H. ELCUM.—Or is he speaking of the mere general working out of the human mind?

The AUTHOR.—In reply to the last speaker, I should say that Comte endeavours to work out the three successive stages in every science—not in very full detail, but still in a general manner. For instance, he thinks that chemistry began with alchemy, in which every object and every process was personified or supposed to be acted on by an indwelling spirit. Then it went on to the metaphysical and suppcsed certain abstract entities, and finally, to its positive stage as it is in the present day when we confine ourselves to phenomena. That is not quite correct, however. We do not confine ourselves to phenomena, for we endeavour to find out cause, and the more progress we make in that direction the greater the discoveries that crown our efforts. If I had had more time at my disposal, or if I could have ventured to take up the time of the Society to any greater extent, I might have shown how Comte sub-divides his stages; for in personifying the epoch, he supposes man to be in a state of fetichism, considering that stocks and stones were really powers to be called upon to assist us in our undertakings or to be entreated not to interfere with us.

Then comes the second stage—the polytheistic—where a number of false gods were assumed by different nations; and then comes monotheism, under which, if we may judge from Comte's language, he regrets we are still labouring.

It has been remarked that I did not do well, perhaps, to refer to Comte's private life. Had he been a man of science "pure and simple," to borrow a French expression, I should have made no reference to his private life whatever; but as he posed as a reformer of the whole spiritual life of man, or took upon himself that *rôle*, I thought myself perfectly justified in showing that in his own person his ideas did not work in a very brilliant manner.

The meeting was then adjourned.

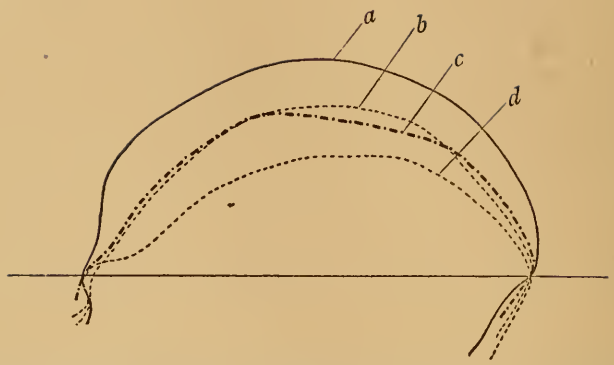

FIG. 1 —OUTLINES OF THE CRANIAL ARCH OF: (*a*) ORDINARY IRISH SKULL: (*b*) SKULL OF A MICROCEPHALIC IDIOT; (*c*) THE FOSSIL CRANIUM DESCRIBED BY DUBOIS· (*d*) SKULL CF A GORILLA. THE BASE LINE IS ONE WHICH PASSES THROUGH THE EXTERNAL OCCIPITAL PROTUBERANCE BEHIND, AND THE CENTRE OF THE GLABELLA IN FRONT.

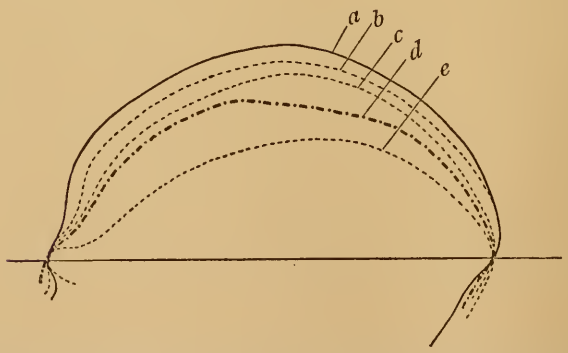

FIG. 2 —OUTLINES OF THE ANTERO-POSTERIOR CRANIAL ARCH OF: (*a*) ORDINARY IRISH SKULL: (*b*) SPY CRANIUM NO. 2; (*c*) NEANDERTHAL CRANIUM; (*d*) THE FOSSIL CRANIUM DESCRIBED BY DUBOIS; (*e*) THE SKULL OF A GORILLA. BASE LINE THE SAME AS IN FIG. 1.

By permission of Messrs. Macmillan.

ORDINARY MEETING.*

T. Chaplin, Esq., M.D., in the Chair.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

Members : — H.R.H. Prince Momolu Massaqui, Africa ; Lt.-Colonel Malcolm Arbuthnot Alves, R.E., Middlesex.

Associate :—G. Swinburne, Esq., C.E., Melbourne.

Hon. Cor. Member :—Professor Armand Sabatier, M.D., France.

The following "Note" was then read by the author :—

NOTE ON THE SUPPOSED DISCOVERY OF REMAINS BELONGING TO AN ANIMAL INTERMEDIATE BETWEEN MAN AND THE APE. By Professor E. Hull, LL.D., F.R.S.

THOSE naturalists who consider man as a direct descendant from some form of ape have long been looking out for remains of the "missing link," or rather several missing links which should connect the skeletons of the families *similidæ* and *hominidæ*. Up to this time none such have been discovered. Recently, however, certain remains have been disinterred from the Pleistocene gravels, or volcanic ash, in the valley of the Bengawan river in Java which have been described by Dr. Eugene Dubois, and are referred by him to a new family to which he gives the name of *Pithecanthropus*, as constituting a connecting link between man and the apes.† These consist of a cranium, a right upper wisdom tooth, and a left femur. There is some doubt, however, whether these three parts of the skeleton all come from the same individual.

The question regarding their relations to man and the ape is examined by Professor D. J. Cunningham, F.R.S., of Dublin, one of our highest authorities on questions of comparative anatomy, in a paper read before the Royal Dublin Society ;‡ and it may be interesting to members of the Victoria Institute if I give in an abbreviated form the conclusions at which he has arrived.

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* 10th of 30th Session.

† "*Pithecanthropus erectus ;* Eine menschænliche Ubergangsform aus Java" (Batavia, 1894).

‡ *Nature*, 28 Feb. 1895.

Professor Cunningham illustrates his reasoning by sketches of the relative form, outline and capacity of the Java cranium and those of two other fossil human crania (the Spy cranium No. 1, the Neanderthal cranium), and that of an average adult woman, and shows that the Java cranium is of a lower type and smaller capacity than either of these fossil specimens; for while the Neanderthal cranium has a capacity of 1,200 centimetres, that of the Java cranium has only a capacity of about 1,000. When compared with the capacity of the average European, the difference is still more striking, this being 1,400–1,500. The Java cranium is therefore undoubtedly one of a very low order; but its capacity is still very much in excess of that of the ape.*

Notwithstanding, however, this low capacity of the Java cranium, Dr. Cunningham has no hesitation in pronouncing that it belonged undoubtedly to a human being as is borne out by its form, and by the capacity itself, which in man falls as low as 1,000 as a minimum. The same is true as regards the femur; and he states that "most certainly they were not derived from any transition form between any of the existing anthropoid apes and man." The "missing link" therefore still remains undiscovered. I should add that a reviewer (*Geological Mag.*, 1895, p. 132) considers from the description and photographic illustrations the cranium is that of a man, "suffering from disease which caused the sutures of the skull to close prematurely, giving rise to a microcephalus condition, and giving rise to the irregular outgrowths of bone on the femur,"—and he considers the evidence from the remains quite insufficient to establish the conclusion that the individual constituted a link between man and apes.

[A brief discussion of a general character then took place, after which a paper on "The Physical Characters and Affinities of the Guanches, or Extinct People of the Canary Islands," by Sir J. W. Dawson, C.M.G., F.R.S., was read. This latter will appear as soon as the discussion is perfected.]

Professor E. Hull, LL.D., writes—4th June, 1896—to say that Professor O. C. Marsh (*Journal of Science* for June, 1896) differs from Professor Cunninghame, basing his opinion on the form of one tooth, a molar, with diverging roots—a simian feature—but this tooth was only "supposed but not proved to belong to the skull."

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* The capacity of the normal cranium of man is about 55 cubic inches, that of the chimpanzee, 27½, and that of the orang 26 inches.

ORDINARY MEETING.*

PROFESSOR E. HULL, LL.D., F.R.S., IN THE CHAIR.

The Minutes of the last Meeting were read and confirmed, and the following Elections were announced :—

ASSOCIATES :—The Right Rev. Bishop Wilson, D.D., Melanesia ; Major-General A. B. Tulloch, C.B., C.M.G. ; Rev. J. L. Darling, M.A., Ireland ; Rev. W. H. Seddon, M.A., Middlesex ; Professor H. V. Hilprecht, Ph.D., D.D., United States.

The following paper was read by the author :—

PASSAGE OF THE RED SEA BY THE ISRAELITES. By Major-General TULLOCH, C.B., C.M.G. (With Map.)

MILITARY operations even in remote ages, provided fairly authentic accounts of them are available, are always interesting. I therefore venture to submit for critical consideration a march which took place some three thousand years ago, and although the narrative of it has been constantly read for many hundred years, the truth of that statement has always been received either with doubt or else conveniently placed beyond criticism by labelling the whole affair as inexplicable: I refer to the Exodus of the Israelites from Egypt.

My notes on the subject would hardly be worth consideration from a military point of view, but the matter has lately been referred to, and as there are now many thoroughly professional soldiers in Egypt, some of whom might be glad of an opportunity for further examination of the country where the march took place, this study of the Exodus may not be thought unworthy of consideration.

Some years ago (January and February, 1882) I was engaged in making a military report on the Suez Canal, in which it was necessary to investigate the possibility of the

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* 12th of 30th Session.

traffic being wilfully interrupted by obstacles sunk in the channel. I had also to examine not only the banks but the country on each side of the Canal for a considerable distance. One day, when so employed between Port Said and Kantarah, a gale of wind from the eastward set in and became so strong that I had to cease work. Next morning on going out I found that Lake Menzaleh, which is situated on the west side of the Canal, had totally disappeared, the effect of the high wind on the shallow water having actually driven it away beyond the horizon, and the natives were walking about on the mud where the day before the fishing-boats, now aground, had been floating. When noticing this extraordinary dynamical effect of wind on shallow water, it suddenly flashed across my mind that I was witnessing a similar event to what had taken place between three and four thousand years ago, at the time of the passage of the so-called Red Sea by the Israelites. Subsequently, when working at the southern part of the Canal, I came very decidedly to the conclusion that not only was the present Bitter Lake in ancient days a continuation of the Red Sea, but that the northern end of the Bitter Lake extended much further upward than it does now, possibly into Lake Timsah, and that the eastern side of the Bitter Lake also formerly extended very much further in that direction, the ancient shore line being evidently several miles to the eastward of its present position. Lake Menzaleh, of course, may be said to be of comparatively modern origin.

In the time of the Pharaohs the now extinguished Pelusiac branch of the Nile extended across the site of the Canal about midway between Kantarah and Port Said. The place where the Pelusiac branch of the Nile crosses the modern Suez Canal can be distinctly recognised by the dark colour of the banks. The Tanitic branch, now also closed, came out somewhere in the vicinity of Port Said. The lagoons at the mouths of the above-named branches, and the swampy nature of the country near them, must in ancient times have effectually prevented any roads being made north of Kantarah. The Modern Lake Ballah, which is now simply a swamp, in the ancient times doubtless occupied a very much more extensive tract of country and must have been filled at each high Nile by infiltration from the Pelusiac branch. The swampy land most probably extended almost as far as Lake Timsah, viz., to El Guisr. Consequently it will be seen that there was only one regular place of passage between

Egypt and Asia, namely, that of Kantara. This has been the recognised gateway to Egypt from remote ages, by which invading armies of Assyrians, Persians, Greeks, Romans, and Arabs have all passed into Egypt. There might have been a by-way between Lakes Ballah and Timsah, namely, the small sandy plateau of El Guisr; but if that existed it would be well guarded by defensive works. It is possible that Etham, "on the edge of the wilderness," the second stage of the Exodus, may have been close on the Egyptian side of this plateau.

On referring to ancient Egyptian records it appears that there was a fresh water canal from the Nile near Bubastis (Zagazig) to some place in the vicinity of the head of the present Bitter Lake, where apparently there was a port for ships coming to Egypt *viâ* the Red Sea; consequently from this point southwards there could have been no road out of Egypt.

It has been suggested that the point of passage may have been at the southern or sea end of the Bitter Lake by Chalouf, where the channel would be narrow, and that at low tide it might have been fordable. If such were the case then it would not have been possible for Pharaoh to say, "They are entangled in the land, the wilderness has shut them in." The northern part of the frontier line was unquestionably fortified, and made as secure as possible against attack from the eastward, and it would be contrary to reason to suppose that the Egyptians would leave a gap in their defence practicable to an enemy at every low spring tide, or that such was unknown to their military authorities responsible for the safety of the country. Again, considering the north and south direction of the channel referred to, an east wind would have no effect on the water there, even if it varied a point or two north or south.

Several winter visitors to Egypt have lately given their ideas as to the route of the Exodus, but apparently few, if any, have actually traversed the ground they describe; as an instance I may mention one writer, who attributes deeply planned strategic schemes to Moses which would have puzzled even Von Moltke to understand. This gentleman finally brings the Israelites to a point on the Bitter Lake by the South Lightship, where even now there is a depth of 30 feet of water, and where no hurricane that ever blew would make the place fordable. With some the narrows between the two Bitter Lakes is considered a possible place

of crossing; but a glance at the Admiralty chart will show that at the present time the depth of water is 12 to 15 feet, and formerly must have been much more; but putting this great depth on one side, from the direction of the narrows, an east wind would have little or no effect on the water there.

All things considered, the broad shallows at the then head of the Red Sea, viz., the north end of the Bitter Lake, where, as now, there would be no tidal influence, is the only place where the position of the water and its depth could be affected by an east wind in the manner so distinctly stated in Exodus xiv, 21. There is another reason for Pharaoh's conclusion on hearing that the Israelites were moving south, and that consequently "the wilderness had shut them in," viz., the want of water. The fresh water canal already referred to terminated at some port at the then head of the Red Sea, and up to this point water would be available, but beyond that none would be forthcoming till the Israelites arrived at Marah on the other side of the Red Sea. Now, even supposing that the crossing had been made at the lower end of the Bitter Lake, that would be at least three marches from the end of the fresh water canal, to which another two marches must be added to arrive at Marah. One well-known Egyptologist, Dr. Sayce, assumes that the Red Sea at the time of the Exodus terminated as it does now at Suez, and that the remains of the ancient canal there was a fresh water one at the time referred to. The Admiralty chart and official survey of the delta are alone sufficient to show from the direction of the ruins that the canal was a salt water one connecting the Red Sea with the Bitter Lake for navigation purposes, and history states that it was made in the time of Darius, on account of the old channel silting up.

The eastern portion of the delta, formerly irrigated by the Tanitic and Pelusiac branches of the Nile, was in the time of the Exodus a very fertile district, with Tanis (Zoan) as its capital. Here, as recorded in the seventy-eighth Psalm, Moses disputed before Pharaoh with the Egyptian Magicians. Immediately south of that part of the country was the land of Goshen, inhabited by the Israelites. It may be mentioned that the first fight in the 1882 Campaign took place at Tel-Mashkuta, apparently the eastern boundary of the ancient land of Goshen, and the last fight at Tel-el-Kebîr, probably not far from the western boundary of the same

district. From the position of Tel-el-Kebîr (the great mound) it is quite possible that when excavations are made it will be found to be Rameses.

It may be asked how it is that such a fertile part of Egypt as that referred to is now a swamp or a desert? There were two causes which eventually brought about this result, viz., bad government which neglected the defence of Egypt and allowed it to be conquered by eastern nations; and then in time of war and hostile occupation there would be no money forthcoming to maintain the great public irrigation and drainage works necessary to keep clear the Pelusiac and Tanitic Nile branches. Consequently these would gradually silt up, and then the fertile land would become a desert or a swamp according to its elevation. Another cause would also operate to close the Nile branches, viz., the strong easterly gales in winter which brought such masses of drift sand from the desert, and which have helped to fill up not only the ancient eastern branches of the Nile, but have also closed the channel of communication between the former northern extension of the ancient Red Sea (now the Bitter Lakes) and the present limit of the Red Sea at Suez. This, as already stated, was reopened by Darius, but the passage was subsequently again closed by drift sand. A vague statement that there must have been a modern upheaval of the land near Suez has found favour with some travellers, but a careful examination of the ground will undoubtedly prove that drift sand, and drift sand only, has raised the level of the ground. The cuttings now being made to increase the width of the south end of the Canal just below Lake Timsah show curious strata which are well worth examining.

Very little is yet known of the history of Egypt at the time the Israelites first arrived, excepting that the delta was occupied by the Hyksos or shepherds, who, coming from the eastward, had conquered the Egyptians. A Hyksos Pharaoh ruled in Lower Egypt with probably an Egyptian Governor at Thebes. The shepherd race naturally gave a cordial welcome to a handful of distressed people, evidently their kinsfolk, who followed the same occupation, viz., that of shepherds (Genesis xlvi, 32), but when the Egyptians succeeded in throwing off the yoke of the Hyksos, the new Pharaoh would naturally be no friend of the Israelites.

Turning now to Bible history, it is recorded that the

Pharaoh of Joseph gave the Israelites some of the best land in Egypt, that in Rameses the land of Goshen (now known to have been in the eastern part of the delta). Some four hundred years afterwards the then Pharaoh (Exodus i, 10), fearing that the half million men of Israel on the eastern border would in time of war join their Semetic kinsfolk who were so close to them in Palestine, decided to take harsh measures with the Israelites, probably with the intention of reducing them to a state of slavery, and destroying their existence as an independent race. Accordingly, in pursuance of this policy, the Egyptians set over them "task-masters to afflict them with their burdens," and compelled them to build the treasure cities of Pithom and Rameses, it being specially stated that the Egyptians "made their lives bitter with hard bondage in mortar and brick." When Moses subsequently complained of their treatment to Pharaoh, the Israelites were still further oppressed by being made to find their own straw, which was necessary for making thoroughly serviceable sun-dried bricks.

The events which finally induced Pharaoh to let the Israelites go are so fully recorded that it is unnecessary to enlarge upon the subject, but the actual route has not yet been definitely settled. According to Bible narrative they journeyed from Rameses to Succoth, thence to Etham on the edge of the wilderness, and then to Pi-hahiroth, which was on the sea-coast (Exodus xiv, 9). From this it is apparent that the Israelites moved from Rameses to the sea in three stages; but Succoth seems to have been the first place from which the regular marches were commenced, because here, as stated in chapter xii, 39, they evidently halted and baked the unleavened bread for use during the first part of the journey. Now, as there was a vast multitude all on foot with flocks and herds, ten miles a day would be the utmost they could accomplish, and as they reached the sea in two marches the crossing place could not have been more than twenty miles from Succoth. The first march brought them to Etham. Here they made a turn and must have kept along the edge of the desert, making for the intended crossing place: this is so stated in chapter xiv, 2, "Speak unto the children of Israel that they turn and encamp before Pi-hahiroth." The route was probably by the Sweet Water Canal, already mentioned, which extended to the port at the then head of the Red Sea.

For some time it was believed that Tel-Mashkuta was the site of Rameses, and it was so marked on all maps for many years. On the supposition that such was correct, I wrote to the *Standard* in 1883, under the signature of "Nemo," giving a short account of my observations the previous year, but my letter was more particularly written in order to draw attention to the wonderful dynamic effect of strong wind on large expanses of shallow water, in the hope that some person, capable of doing so, would make further investigations in regard to its bearing upon the passage of the Red Sea as mentioned in Exodus; the effect of the letter is unknown, except that it was referred to in some so-called religious publications, not always in complimentary terms.

In 1883, however, the Egyptian Exploration Fund was established, especially to examine the mounds in the delta, and in the district of the old land of Goshen. The first explorer sent out by the Society was Monsieur Naville, who commenced at Tel-Mashkuta on the supposed site of Rameses, and found that the mound was not the remains of Rameses but those of Pithom, which was also Succoth. Unfortunately, being abroad at the time M. Naville's book on the subject was published, and busily engaged professionally, I have not yet seen it; however, a short time ago I came across Miss Edwards' work on Egypt, and there found some most interesting accounts of M. Naville's discoveries at Tel-Mahouta, or Mashkuta as it is now spelt. She states as follows: "M. Naville found under the mounds a great enclosing wall 24 feet thick containing the site of a temple, and a space of 55,000 square yards filled with a series of most curious subterranean structures entirely unlike any architectural remains ever discovered in Egypt or elsewhere. These subterranean store chambers, magazines, or granaries, are solidly built square chambers of various sizes, divided by massive partition walls about 10 feet in thickness, without doors or any kind of communication; evidently destined to be filled and emptied from the top by means of trap doors and ladders. Excepting the corner occupied by the temple, the whole area of the great walled inclosure is honey-combed with these cellars. The bricks are large and are made of Nile mud pressed in a wooden mould and dried in the sun; also, they are bedded in *with mortar*, which is not common, the ordinary method being to bed them with mud, which dries immediately and holds almost as tenaciously as

mortar. Now, it is a very curious and interesting fact that the Pithom bricks are of three qualities: in the lower courses of these massive cellar walls they are mixed with chopped straw; higher up, where the straw may be supposed to have run short, the clay is found to be mixed with reeds, doubtless translated as 'stubble' in the Bible narrative: the bricks of the uppermost courses consist of mere Nile mud with no binding substance whatever.

"The temple was dedicated to Tum, the patron deity of the town and surrounding district. Now, as this place was not only a store fort, but also a sanctuary, so also it had a secular name and a sacred name. Its secular name proved to be Thukut or Sukut, and its sacred name Pa Tum. These particulars we learn from inscriptions found upon the spot. For instance, engraved on a black granite statue of a deceased prince and high priest named Aak, we find a prayer in which he implores 'all the priests who go into the abode of Tum, the great god of Sukut,' to pronounce a certain funerary formula for his benefit; whilst a fragment of another statue is inscribed with the names and titles of one Pames Isis, who was an 'official of Tum of Sukut and Governor of the storehouse.' In these two inscriptions (to say nothing, of several others) three important facts are recorded, viz., that the place was a storehouse, and that its sacred name was Pa Tum, and its secular name, also the name of the surrounding district, was Sukut. Both temple and town were proved by inscriptions to have been founded by Rameses II., the Pharaoh of the first chapter of the Exodus.

"Now Pa Tum of Sukut had been known to Egyptologists for many years in certain geographical lists of temples and local festivals sculptured on the walls of various temples in Upper Egypt, and Dr. Brugsch had long ago identified these names with Pithom or Succoth, but till M. Naville excavated Tel-Mashkuta, Pithom of Succoth was but a name and a theory."

The preceding are extracts from Miss Edwards' book, doubtless taken almost *verbatim* from M. Naville's account; they are given in full in order to show that, although the site of Rameses is not yet found, unquestionably Succoth, the second halting-place of the Israelites, was identified, and from what has already been stated with reference to the length of a day's journey, it could not have been more than twenty miles from the crossing place, which, therefore, must

have been somewhere at the head of the present Bitter Lakes or a little higher up towards Timsah, where there would be broad shallows similar to those existing at Lake Menzaleh.

Viewing matters as they were at the time of the Exodus, the situation would be as follows: Pharaoh at Tanis, which is about twenty-five miles north-west of Kantara; the headquarters and assembling of the Israelites at Rameses some distance westwards of Ismaîlia. The main road out of Egypt being by Kantara, with possibly a well-guarded by-route over the El Guisr plateau. Being the season of low Nile (Passover) the cultivated country would be dry and passable everywhere.

When Moses received permission to go, it was naturally expected he would take the usual road; this, for the reasons given in Exodus xiii, 17, 18, he did not do, but turned down south as mentioned. Pharaoh was much astonished, and said, "They are entangled in the land, the wilderness hath shut them in." A glance at the map will show that in turning south the Israelites were apparently marching towards the waterless desert of Gebel Geneffeh, on the west shore of the Red Sea, from which there was no exit; but instead of continuing due south they made, as already stated, a halt at Pi-hahiroth (chapter xiv, 2). This sudden counter-march probably alarmed the Egyptians, who then possibly feared some scheme of the Israelites which would cause further trouble. A large force of mounted men was at once sent to follow, with doubtless instructions to attack and delay the Israelites, if necessary, till enough infantry arrived to overpower them. This force arrived and camped near the fugitives, just as they got to the seashore (chapter xiv, 9). During the night an easterly gale commenced, and with the slightest northing in the wind the shallows referred to would naturally be free from water by the morning. This was so. The Israelites evidently all pushed over at daybreak, and the Egyptians, seeing them escaping, sent their mounted men (chariots) forward to stop them. On coming to the wet mud they at once "dragged heavily," and could not get on, but by this time the Israelites would be across, and the easterly gale stopping, the water would at once flow back again and drown all those out on the mud. From chapter xiv, 10, the wind apparently went round to the west as soon as the Israelites were over; this would cause the water to return to its original place with great rapidity.

Thus, from an ordinary military examination of the actual district, and then considering what its state was in ancient times, it will be seen that the simple Bible narrative is evidently a very graphic and correct account of what really took place.

The Chairman (Professor E. Hull, LL.D., F.R.S.).—I am sure we have all listened with much interest to General Tulloch's statement of his views with regard to this wonderful event of Bible history—an event to the truth of which the whole Jewish nation is a witness at the present day. I assume that the author does not in any way intend to do away with the miraculous element in the history of the passage of the Red Sea by the Israelites. We shall all be pleased to hear any observations that may be made on the subject.

The Hon. Secretary.—Before the discussion commences I may mention that a letter has been received from the Chief Rabbi (Dr. H. Adler), in which he says, "I much regret that duties at my office render it impossible for me to attend at the lecture to be given by Major-General Tulloch on the passage of the Red Sea. It would have afforded me much pleasure to be present."

Rev. A. Löwy, LL.D.—I came to be a listener rather than an instructor. The researches that have been made in this matter have certainly given new light to the ancient history of an event of historic importance, and I think we must be grateful for the excellent observations that have fallen from the author with regard to the pursuit of the Israelites. I recollect that Brugsch Pacha called attention to the locality where the Israelites might have crossed and where the Egyptians would be drowned, and he turned his attention to Lake Menzaleh. I am not in a position to say that Brugsch was correct, but it is wonderful to observe how dry land may be, from the cause stated,

suddenly turned into sea and sea into dry land. No one who has not been an eye-witness of the natural configuration referred to can give any acceptable opinion upon the matter, and I would not venture to give an opinion for or against it: but it strikes me that what we have heard to-day clears up many of the doubts which we might otherwise entertain. We must be very grateful indeed for the excellent observations that have been made by General Tulloch.

Mr. M. Rooke.—I should like to ask the present depth of lake Menzahleh near Port Said?

The Author.—It is only about 5 feet or 6 feet.

Mr. Rooke.—Where was the water driven to?

The Author.—It was "packed up" to the north-west.

Mr. Rooke.—Could you see it in any way?

The Author.—It was seven miles off. It had absolutely disappeared.

Rev. T. J. Gaster, M.A.—I should like to point out that the passage of the Israelites is said to have been by night and not by day.

Captain Francis Petrie, F.G.S. (*Hon. Sec.*).—M. Naville in his paper* referring to this subject, cites instances of the action of wind on water at Geneva; he says, "In 1495, and again in 1645, a very strong wind drove back the Rhone into the Lake as much as a quarter of a league, and it looked like a wall of water . . . and the inhabitants could go down on dry ground between the bridges and pass from one bank to the other."†

The Chairman.—There can be no doubt whatever of the effect of wind upon water, when we consider that the great equatorial currents which circulate round the ocean (as far as the continents will permit them, and which give rise to the north and south currents branching off on either hand), are due to the

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* *Trans.*, vol. xxvi, p. 12.

† Another traveller—the Rev. Haskett Smith—says: "But one of the most curious and remarkable effects produced by a strong sirocco is that which I have witnessed more than once in connection with the broad and shallow expanses of water to which I have alluded. I have seen these rain deposits in the plains swept up into heaps by the winds, like dust before a broom, laying bare the land which had been covered, and piling up on one side of it a literal bank or wall of water."—Ed.

prevalent trade winds. This is the greatest instance we have on the surface of the globe of the power of the wind upon water, and about that I think none of us have the slightest cause to disagree with the author of this paper. As a geologist I feel somewhat gratified with the author's views, because I have always held, with some other observers, as, for example, Sir J. W. Dawson (*Modern Science in Bible Lands*, p. 391), that from geological causes the waters of the Red Sea ran up higher into the isthmus than they do at present, filling the great Bitter Lake, and I think it was the great engineer Sir John Coode who first showed that there was the clearest evidence that the Isthmus of Suez had formerly been the bed of the Red Sea. What is the fact? The fact is, that that valley consists of a superficial covering of sand, to which the author has referred, which of course generally is being drifted and has been so for thousands of years; but when once you get down to the solid material below that sand, you find the floor of the isthmus to be an old sea bed, consisting partly of calcareous material with shells and corals, the same, I suppose, as those existing in the Red Sea at the present day. Therefore we have clear geological evidence that the Red Sea did extend, as the author has stated, at least as high as this comparatively high ridge (El Guisr), where he states there was a fortified road across into Palestine and Arabia. Not only is the floor of the isthmus formed of an old sea bed, but the author is doubtless aware that at the height of 220 feet—the height of the Mosque of Mehemet Ali at Cairo—there is an old sea beach, which anyone can see for himself, running along the limestone cliff. You have gravel with shells and various marine forms now living in the Red Sea and the Mediterranean. Consequently, it is quite clear that in very recent geological times the whole of Lower Egypt was covered by the waters of the sea; and, as the land gradually rose, of course the higher portions emerged before the lower portions, and these would be the last to rise. Is there, therefore, any reason to doubt that more than three thousand years ago, at the time of the Exodus, the elevation of that portion had not gone on to the extent it has at the present day, and that there was a considerable arm of water running up by the Gulf of Suez at least as far as the ridge of El Guisr?

It is only on geological grounds that you can come to a clear understanding of the passage of the Israelites. I maintain, therefore, that the arm of the Red Sea was the Red Sea itself—not

merely a swamp or a Bitter Lake, but an arm of the Red Sea. The phraseology of the Exodus (I do not profess to be a Hebrew scholar), or rather the phraseology of our translation, is very clear indeed that it was the Red Sea, and not merely a slight swamp covered by a few feet of water, but was of considerable depth. And, therefore, when Pharaoh was pursuing from the north-west, and the Israelites were making their way by the high road into Arabia and Palestine, they "turned" as described (Ex. xiv, 2) at that point southwards according to the commandment of the Lord through Moses; they were then in a *cul-de-sac*. They had the arm of the Red Sea on the east, and they had the lofty range of Gebel Attaka towards the south, and therefore it required something more than an accidental east wind to clear a passage for them across this arm of the Red Sea. I have given my views on this subject more fully in a work entitled *Mount Seir*, published by the Committee of the Palestine Exploration Fund. I believe there was a very considerable arm of the Red Sea, and that it was through a miraculous interposition that the Israelites were obliged to have a passage hewn for them through the waters. I have listened with great interest to the paper.

The AUTHOR.—Allow me to answer a few questions, beginning with the last one. I made no statement that the Bitter Lakes were shallow. I distinctly stated that the Bitter Lakes at that time must have had a depth of 30 feet.

The CHAIRMAN.—I thought you said 5 feet or 6 feet.

The AUTHOR.—No, my statement just read was as follows: "This gentleman finally brings the Israelites to a point on the Bitter Lake by the south light-ship, where even now there is a depth of 30 feet of water, and where no hurricane that ever blew would make the place fordable." Anyone with even a very elementary knowledge of geology must see at once that the Mediterranean and Red Seas were at one time in communication across what is now the isthmus of Suez; later on one of the branches of the Nile evidently discharged its muddy waters into the then head of the Red Sea, layers of hardened mud may even now be seen in cuttings, lately enlarged about Shaloof; these layers are apparently pretty regularly sandwiched in amongst beds of drift sand. It was this steady supply of drift sand from the eastward, which I believe first of all cut off the old head of the Red Sea, at the southern shallows from the parent ocean, and

eventually made the old deeper northern sea bed the morass of the Bitter Lakes as found by de Lesseps.

I trust I have now proved to all reasonable satisfaction that the simple Bible narrative is true to the very letter. For ages past very eminent theologians and Bible critics have been content with the Sunday School picture idea of a crowd of Israelites running through a narrow opening with upright walls of water 40 or 50 feet high, precisely similar to a railway cutting in very stiff soil; for the future it is to be hoped they will know better.

With reference to the passage by night, it was Passover, and therefore full-moon; and unquestionably, as soon as the wind produced enough effect, I see no reason why they should not have begun their passage.

The Meeting was then adjourned.

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3. Any person desirous of becoming a Member or Associate shall make application for admission by subscribing the Form A of the Appendix, which must be signed by two Members of the Institute, or by a Member of Council, recommending the candidate for admission as a Member; or by any one Member of the Institute, for admission as an Associate.

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* *Exception:* If an Associate has been selected, it has been at an Annual General Meeting, and then only after the whole of the members had been consulted, and no disapproval signified.

4. Upon such application being transmitted to one of the Secretaries, the candidate for admission may be elected by the Council, and enrolled as a Member or Associate of the Victoria Institute, in such manner as the Council may deem proper; having recourse to a ballot, if thought necessary, as regards the election of Members; in which case no person shall be considered as elected unless he have three-fourths of the votes in his favour.

5. Application for admission to join the Institute being thus made by subscribing Form A, as before prescribed, such application shall be considered as *ipso facto* pledging all who are thereupon admitted as Members or Associates to observe the Rules and Bye-Laws of the Society, and as indicative of their desire and intention to further its objects and interests; and it is also to be understood that only such as are professedly Christians are entitled to become *Members*.

6. Each Member shall pay an Entrance Fee of One Guinea and an Annual Contribution of Two Guineas. A Donation of Twenty Guineas shall constitute the donor a Life Member.

7. Each Associate shall pay an Annual Contribution of One Guinea A donation of Ten Guineas shall constitute the donor a Life Associate.

8. The Annual Contributions shall be considered as due in advance on the 1st day of January in each year, and shall be paid within three months after that date; or, in the case of new admissions, within three months after election.

9. Any Member or Associate who contributes a donation in one sum of not less than Sixty Guineas to the funds of the Institute shall be enrolled as a Vice Patron thereof, and will thus also become a Life Member or Life Associate, as the case may be.

10. Should any member of the Royal Family hereafter become the Patron, or a Vice-Patron, or Member of the Institute, the connexion shall be regarded as purely Honorary; and none of the Rules and Bye-Laws relating to donations, annual contributions or obligations to serve in any office of the Society, shall be considered as applicable to such personages of Royal Blood.

11. Any Member or Associate may withdraw from the Society at any time, by signifying a desire to do so by letter, addressed to one of the Secretaries; but such shall be liable for the contribution of the current year, and shall continue liable for the annual contribution, until all sums due to the Society from such Member or Associate shall have been paid, and all books or other property borrowed from the Society shall have been returned or replaced.

12. Should there appear cause, in the opinion of the Council, for the

exclusion from the Society of any Member or Associate, a private intimation may be made by direction of the Council, in order to give such Member or Associate an opportunity of withdrawing from the Society; but, if deemed necessary by the Council, a Special General Meeting of Members shall be called for the purpose of considering the propriety of expelling any such person: whereat, if eleven or more Members shall ballot, and a majority of those balloting shall vote that such person be expelled, he shall be expelled accordingly. One month's notice, at least, shall be given to the Members of any such Special General Meeting.

13. Non-resident Members and Associates, or others desirous of promoting the objects and interests of the Institute, may be elected by the Council to act as corresponding Members abroad, or as Honorary Local Secretaries, if within the United Kingdom, under such arrangements as the Council may deem advisable.

14. The whole property and effects of the Society shall be vested in two or more Trustees, who shall be chosen at a General Meeting of the Society. The Trustees are empowered to invest such sums as the Council may, from time to time, place in their hands, in, or upon any of the Stocks, Funds, or Securities, for the time being, authorised by statute for the investment of trust funds by trustees, and shall have the usual powers of trustees in regard thereto. [The President, Hon. Treasurer, and Hon. Secretary may officially give effect to such resolutions as a General Meeting may pass in regard thereto.]

14*a*. All moneys received on account of the Institute shall be duly paid to its credit at the Bankers, and all cheques shall be drawn, under authority of the Council, and shall be signed by the Honorary Treasurer and Honorary Secretary.

15. The accounts shall be audited annually, by a Committee, consisting of two Members,—one of whom may be on the Council,—to be elected at an Ordinary Meeting of the Society preceding the Anniversary Meeting. This Committee shall make a written Report to the Council at the first Meeting after such audit, and also to the Institute, upon the day of the Annual General Meeting,—stating the balance in the Treasurer's hands and the general state of the funds of the Institute.

16. Both Members and Associates shall have the right to be present to state their opinion, and to vote by show of hands at all General and Ordinary Meetings of the Society; but Members only shall be entitled to vote by ballot, when a ballot is taken in order to determine any question at a General Meeting.

§ III. *Bye-Laws* (Privileges).

1 A Member or Associate, when elected, shall be so informed by the Secretary in a printed copy of the letters, Form B, in the Appendix.

2. Members and Associates shall not be entitled to any privileges, or have the right to be present, or to vote at any of the Meetings of the Society, till they have paid the contributions due by them.

3. Annual subscriptions shall be considered as in arrear, if not paid on or before 31st March in each year, or within three months after election, as the case may be.

4. Should any annual subscription remain in arrear to the 30th June, or for six months after election, the Treasurer shall cause to be forwarded to the Member or Associate from whom the subscription is due, a letter, Form D, in the Appendix, unless such Member or Associate reside out of the United Kingdom ; in which case the Form D shall not be sent unless the subscription continues unpaid till the 30th September.

5. If any arrears be not paid within twelve months, the Council shall use their discretion in erasing the name of the defaulter from the list of Members or Associates.

6. Members shall be entitled to introduce two Visitors at the Ordinary Meetings of the Society ; and to have sent to them a copy of all the papers read before the Society, which may be printed in its Transactions* or otherwise, and of all other official documents which the Council may cause to be printed for the Society ; they will also be entitled to a copy of all such translations of foreign works or other books as are published under the auspices of the Society in furtherance of Object 6 (§ I.).

7. Associates may introduce one visitor at the Ordinary Meetings, and shall be entitled to all the minor publications of the Society, and to a copy of its Transactions during the period of their being Associates, but not to the translations of foreign works or other books above referred to.† It shall, however, be competent to the Council of the Society, when its funds will admit of it, to issue the other publications of the Society to Associates, being ministers of religion, either gratuitously or at as small a charge as the Council may deem proper.

8. When it shall be found necessary to send the letter, Form D, to any Member or Associate who may be in arrear, the printed papers and other

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* And the Transactions issued in the years during which they have not subscribed may be purchased at half price.

† These, as well as the Transactions issued in the years during which they have not subscribed, may be purchased at half price.

publications of the Society shall cease to be sent to such Member or Associate till the arrears are paid; and, until then, he shall not be allowed to attend any Meeting of the Society, nor have access to any public rooms which may be in its occupation.

9. The Library* shall be under the management and direction of the Council, who are empowered to designate such works as shall not be allowed to circulate.

10. Each Member† shall be allowed to borrow books from the Library, and to have not more than three volumes in his possession at the same time; pamphlets and periodical publications not to be kept above fourteen days, nor any other book above three weeks.

11. Members who may borrow books from the Library shall be answerable for the full value of any work that is lost or injured.

12. Periodical publications shall remain on the table for a month, other books for a fortnight, after they are received.

13. When a book or pamphlet is wanted, and has been the stipulated time in the possession of any Member, the Secretary shall request its return, and a fine of threepence a day shall be incurred for every day it may be detained, which fine shall commence on the third day after the transmission of the notice in the case of town Members, and after the sixth day in the case of country Members; and until the return of such works, and the discharge of all fines incurred, no further issue of books shall be permitted to the Member applied to.

14. The books shall be ordered in for inspection at such times as the Council shall appoint, and a fine of half-a-crown shall be incurred for neglecting to send in books by the time required in the notice.

15. A Book shall lie on the Library table in which Members may insert, for the consideration of the Council, the titles of such works as they desire to be purchased for the Institute.

§ IV. *Bye-Laws* (General, Ordinary, and Intermediate Meetings).

1. A General Meeting of Members and Associates shall be held annually on May 24th (being Her Majesty's birthday, and the Society's anniversary), or on the Monday following, or on such other day as the Council may determine as most convenient, to receive the Report of the Council on the state of the Society, and to deliberate thereon; and to discuss and determine such matters as may be brought forward relative to the affairs of the Society; also, to elect the Council and Officers for the ensuing year.

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* For the use of Members and Associates.—*See 7th Object.*

† Members only are allowed to take books away.

2. The Council shall call a Special General Meeting of the Members and Associates, when it seems to them necessary, or when required to do so by requisition, signed by not less than ten Members and Associates, specifying the question intended to be submitted to such Meeting. Two weeks' notice must be given of any such Special General Meeting; and only the subjects of which notice has been given shall be discussed thereat.

3. The Ordinary Meetings of the Society shall usually be held on the first and the Intermediate Meetings on the third Monday evenings in each month, from November to June inclusive, or on such other evenings as the Council may determine to be convenient: and a printed card of the meetings for each Session shall be forwarded to each Member and Associate.

4. At the Ordinary and Intermediate Meetings the order of proceeding shall be as follows: The President, or one of the Vice-Presidents, or a Member of the Council, shall take the chair at 8 o'clock precisely, the minutes of the last Ordinary or Intermediate Meeting shall be read aloud by one of the Secretaries, and, if found correct, shall be signed by the Chairman; the names of new Members and Associates shall be read; the presents made to the Society since their last Meeting shall be announced; and any other communications which the Council think desirable shall be made to the Meeting. After which, the Paper or Papers intended for the evening's discussion shall be announced and read, and the persons present shall be invited by the Chairman to make any observations thereon which they may wish to offer.

> The claims of Members and Associates to take part in a discussion are prior to those of Visitors. The latter when desiring to speak upon any Paper, must first send their cards to the Chairman and ask permission (unless they have been specially invited by the Council "to attend, and join in considering the subject before the Meeting," or are called upon by the Chairman). 1875.

5. The Papers read before the Society, and the discussions thereon, ully reported, shall be printed by order of the Council; or, if not, the Council shall, if they see fit, state the grounds upon which this Rule has been departed from, in the printed Journal or Transactions of the Society.

6. The Council may at their discretion authorise Papers of a general kind to be read at any of the Ordinary or Intermediate Meetings, either as introductory lectures upon subjects proper to be afterwards discussed, or as the results of discussions which have taken place, in furtherance of the 5th Object of the Society (§ I).

7. With respect to Intermediate Meetings, the Papers read at which

are not necessarily printed nor the discussions reported,* the Council at its discretion, may request any lecturer or author of a paper to be read thereat, previously to submit an outline of the proposed method of treating his subject.

8. At the Ordinary or Intermediate Meetings no question relating to the Rules or General Management of the affairs of the Society shall be introduced, discussed or determined.

§ V. *Bye-Laws* (Council Meetings).

1. The Council shall meet at least once every month from November to June inclusive, or at any other time and on such days as they may deem expedient. The President, or any three Members of the Council, may at any time call a Special Meeting, to which the whole Council shall be summoned.

2. At Council Meetings three shall be a quorum ; the decision of the majority shall be considered as the decision of the Meeting, and the Chairman shall have a casting vote.

3. Minutes of the Proceedings shall be taken by one of the Secretaries, or, in case of his absence, by some other Member present, whom the Chairman may appoint ; which Minutes shall afterwards be entered in a minute-book kept for that purpose, and read at the next Meeting of the Council, when, if found correct, they shall be signed by the Chairman.

§ VI. *Bye-Laws* (Papers).

1. Papers presented to be read before the Society shall, when read, be considered as the property of the Society, unless there shall have been any previous engagement with its author to the contrary; and the Council may cause the same to be published in any way and at any time they may think proper after having been read. If a Paper be not read, it shall be returned to the author; and, if a Paper be not published within a reasonable time after having been read, the author shall be entitled himself to publish it, and he may borrow it for that purpose.

2. When a Paper is sent to the Society for the purpose of being read, it shall be laid before the Council, who shall refer it to two of that body, or of the other Members or Associates of the Society whom they may select for their opinions as to the character of the Paper and its fitness or otherwise for being read before the Society, which they shall state as briefly as may be, in writing, along with the grounds of their respective opinions. Should one of such opinions be adverse to the Paper and

* So arranged when the "Intermediate Meetings" were commenced 16th January, 1871.

against its being read before the Society, then it shall be referred to some other referee, who is unaware of the opinion already pronounced upon the Paper, in order that he may state his opinion upon it in like manner. Should this opinion be adverse to the Paper, the Council shall then consult and decide whether the Paper shall be rejected or read ; and, if rejected, the Paper shall be returned to the author with an intimation of the purport of the adverse opinions which have been given with respect to it ; but the names of the referees are not to be communicated to him, unless with their consent or by order of the Council. All such references and communications are to be regarded as confidential, except in so far as the Council may please to direct otherwise.

3. The Council may authorise Papers to be read without such previous reference for an opinion thereon ; and when a Paper has been referred, and the opinion is in favour of its being read in whole or in part, the Council shall then cause it to be placed in the List of Papers to be so read accordingly, and the author shall receive due notice of the evening fixed for its reading.

4. The authors of Papers read before the Society shall, if they desire it, be presented with twenty-five separate copies of their Paper, with the discussion thereon, or with such other number as may be determined upon by the Council.

§ VII. *Bye-Laws* (General).

1. The government of the Society, and the management of its concerns are entrusted to the Council, subject to no other restrictions than are herein imposed, and to no other interference than may arise from the acts of Members in General Meeting assembled.

2. With respect to the duties of the President, Vice-Presidents, and other Officers and Members of Council, and any other matters not herein specially provided for, the Council may make such regulations and arrangements as they deem proper, and as shall appear to them most conducive to the good government and management of the Society, and the promotion of its objects. And the Council may hire apartments, and appoint persons not being Members of the Council, nor Members or Associates of the Institute, to be salaried officers, clerks, or servants, for carrying on the necessary business of the Society; and may allow them respectively such salaries, gratuities, and privileges, as to them, the Council, may seem proper ; and they may suspend any such officer, clerk or servant from his office and duties, whenever there shall seem to them occasion ; provided always, that every such appointment or suspension shall be reported by the Council to the next ensuing General Meeting of the Members to be then confirmed or otherwise as such meeting may think fit.

FORM A.

FORM OF APPLICATION *for the Admission of Vice-Patrons, Members, or Associates of the* VICTORIA INSTITUTE.

[*Date*]_____ 18 .

*I hereby desire to be enrolled a** *of the* VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

* *Here insert* Vice-Patron, *or* Member, *or* Life Member, *or* Associate, *or* Life Associate.

Candidate's ordinary Signature, and full name, if necessary.

_____

_____

Title, Profession, University degree, &c., or other distinction.

_____

_____

*Address*_____

If an Author, the name of the Candidate's works may be here stated.

_____

_____

When filled this form is to be sent to the

Honorary Secretary of the VICTORIA INSTITUTE,
8, Adelphi Terrace, Strand, London, W.C.

FORM B.

SIR, 18 .

I have the pleasure to inform you, with reference to your application dated the , that you have duly been elected a of the VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN.

I have the honour to be, Sir,
Your faithful Servant,

To_____ *Hon. Sec.*

FORM C.

(*Bankers*) Messrs._____

* Please pay Messrs. RANSOM, BOUVERIE, & Co. my Annual Contribution of TWO GUINEAS to the VICTORIA INSTITUTE, due on the 1st of January, 189 , and the same amount on that day in every succeeding year, until further notice.

I am,
Your obedient Servant,

_____189 .

If this Form be used, please add your Signature, Banker's Name, and the Date, and return it to the Office, Adelphi Terrace. Receipt-stamp required.

* The above is the form for Members. The form for Associates is the same except that the Subscription stands as "ONE GUINEA."

FORM D.

SIR, 18 .

I am directed by the Council of the VICTORIA INSTITUTE to remind you that the Annual Contribution due by you to the Society for the year is now six months in arrear; and I have to call attention to the Bye-Laws of the Institute, § III, ¶ 4 and 8, and to request you to remit to me the amount due (viz., £) by Post-office order or otherwise, at your earliest convenience.

I have the honour to be, Sir,
Your faithful Servant,

To_____ *Treasurer.*

FORM E.

FORM OF BEQUEST.

I give and bequeath to the Trustees or Trustee for the time being of THE VICTORIA INSTITUTE, OR PHILOSOPHICAL SOCIETY OF GREAT BRITAIN, to be applied by them or him for the purposes of the said Society, the sum of £ , such sum to be wholly paid out of such part of my personal estate as may be lawfully applied to the purposes of charity, and in priority to all other legacies. And I declare that the receipt of the Trustees or Trustee for the time being of the said Society shall be a good discharge to my Executors for the said legacy.

THE JOURNAL OF THE TRANSACTIONS

ISSUED DURING PAST YEARS.

Since the Inauguration of the Society, the following Papers have been read :— The Quarterly Parts of the Journal are indicated by the numbers prefixed. (*The volumes are sold at One Guinea to Non-Members; Half-a-Guinea to Members and Associates; those issued during the years of subscription are not charged for.*)

FIRST SERIES, VOLS. 1 TO 5.

VOL. I.

1. A Sketch of the Existing Relations between Scripture and Science. By the late GEORGE WARINGTON, Esq., F.C.S.
2. On the Difference in Scope between Scripture and Science. By the late C. MOUNTFORD BURNETT, Esq., M.D., Vice-President V.I.
   On Comparative Philology. By the Rev. ROBINSON THORNTON, D.D., Vice-President V.I.
   On the Various Theories of Man's Past and Present Condition. By the late JAMES REDDIE, Esq., Hon. Sec. V.I.
3. On the Language of Gesticulation and Origin of Speech. By Professor J. R. YOUNG.
   On Miracles: their Compatibility with Philosophical Principles. By the Rev. W. W. ENGLISH, M.A.
   Thoughts on Miracles. By the late E. B. PENNY, Esq.
   On the General Character of Geological Formations. By the late E. HOPKINS, Esq., C.E.
4. On the Past and Present Relations of Geological Science to the Sacred Scriptures. By the Rev. Professor JOHN KIRK.
   On the Lessons taught us by Geology in relation to God. Rev. J. BRODIE, M.A.
   On the Mutual Helpfulness of Theology and Natural Science. By Dr. GLADSTONE, F.R.S.
   On Falling Stars and Meteorites. By the late Rev. W. MITCHELL, M.A., Vice-President V.I.
   (*The above Papers, with the Discussions thereon, and with "Scientia Scientiarum: being some Account of the Origin and Objects of the Victoria Institute," with the Reports of the Provisional Proceedings, and the Inaugural Address by the late Rev. Walter Mitchell, M.A., Vice-President, form Vol. I. of the "Journal."*)

VOL. II.

5. On the Terrestrial Changes and Probable Ages of the Continents, founded upon Astronomical Data and Geological Facts. By the late Evan Hopkins, Esq., C.E., F.G.S.
   On the Credibility of Darwinism. By the late George Warington, Esq., F.C.S.
   On the Credibility of Darwinism. By the late James Reddie, Esq., Hon. Sec. V.I.
6. On Utilitarianism. By the late James Reddie, Esq., Hon. Sec. V.I.
   On the Logic of Scepticism. By the Rev. Robinson Thornton, D.D., V.P.
   Annual Address (On the Institute's Work). By the late James Reddie, Esq., Hon. Sec. V.I.
7. On the Relations of Metaphysical and Physical Science to the Christian Doctrine of Prayer. By the Rev. Professor John Kirk.
   On Geological Chronology, and the Cogency of the Arguments by which some Scientific Doctrines are supported. (In reply to Professor Huxley's Address delivered at Sion College on 21st Nov., 1867.) By the late J. Reddie, Esq., Hon. Sec. V.I. (1867–68).
8. On the Geometrical Isomorphism of Crystals, and the Derivation of all other Forms from those of the Cubical System. (*6 Plates.*) By the late Rev. W. Mitchell, M.A., V.P.

VOL. III.

9. On the Antiquity of Civilisation. By the late Bishop Titcomb, D.D.
   On Life, with some Observations on its Origin. By J. H. Wheatley, Esq., Ph.D.
   On the Unphilosophical Character of some Objections to the Divine Inspiration of Scripture. By the late Rev. Walter Mitchell, M.A.
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VERY SPECIAL.

The delay in the issue of Vol. 28, now completed, is much regretted. It has been due to unavoidable circumstances ; it is therefore hoped that it will kindly be excused by all.

This delay has not been without its advantages, as it has enabled several foreign and other Members to bring forward important points connected with the papers and discussions which must otherwise have been omitted from the volume.

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